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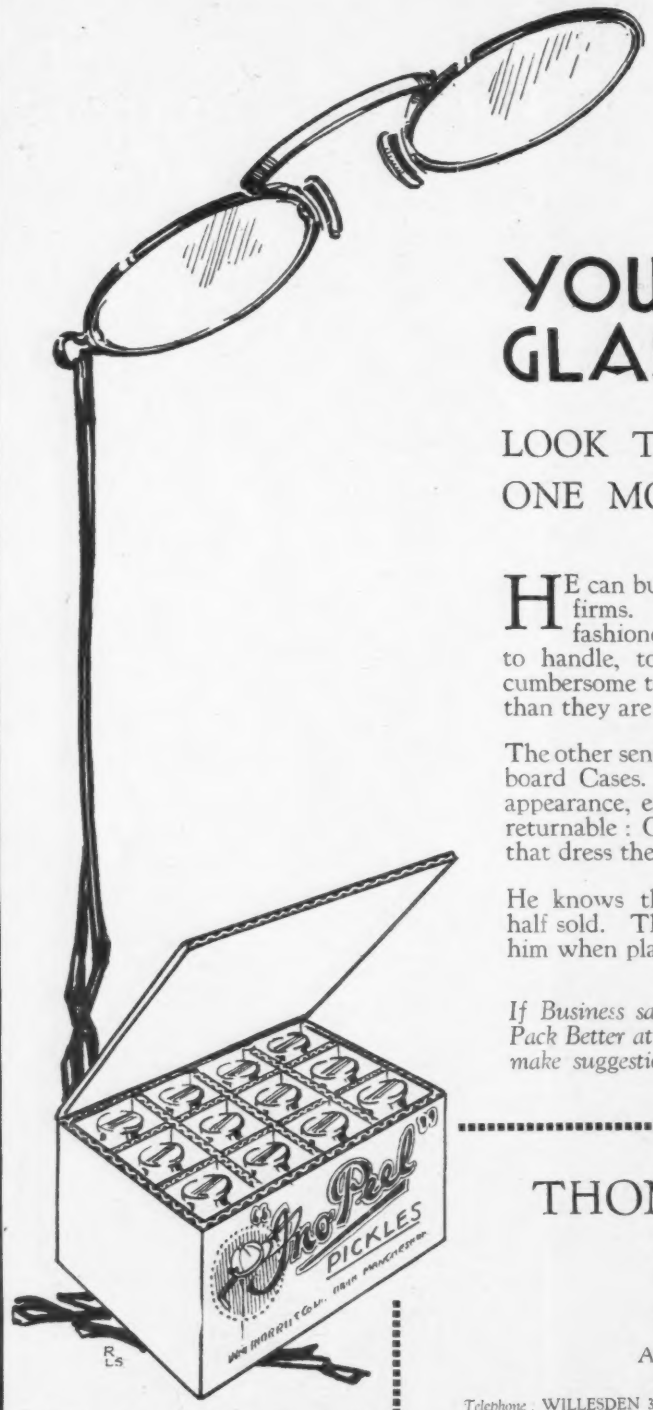

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Food Manufacture

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Vol. I., No. 5 — The editor will be glad to consider contributions from those engaged in the Food Industry. Articles intended for publication should be of a practical nature and accompanied by photographs or drawings whenever possible. — September, 1927

CONTENTS

	PAGE
EDITORIAL COMMENTS	109–112
SCIENTIFIC CONTROL IN THE CHOCOLATE INDUSTRY	113
ENGLISH CONFECTIONERY	117
FOODSTUFFS FROM YEAST	118
ACCURATE TEMPERATURE MEASUREMENT IN SUGAR BOILING	119
MARKETING CONFECTIONERY	123
RECIPES	125
THE BAKERS' AND CONFECTIONERS' EXHIBITION	*Inset*
SCIENTIFIC CONTROL IN THE SUGAR CONFECTIONERY INDUSTRY	127
RECENT ADVANCES IN CEREAL CHEMISTRY	129
A PROMISING SPECIALITY: PRUNE ICE CREAM	131
PUBLICATIONS RECEIVED	131
CONFERENCE ON BREAD AND FLOUR	132
COMMERCIAL AND LEGAL NEWS	133
RECENT PATENTS	137
CURRENT LITERATURE	138

White Bread.

THE *Daily Express* of July 15 published an interesting statement made by Sir Thomas Horder, physician in ordinary to the Prince of Wales and physician to St. Bartholomew's Hospital. The following is extracted:

"Much of the advocacy of wholemeal bread turns on the fact, an undoubted one, that, bulk for bulk, it contains more vitamin B than does white bread. This fact becomes of very minor importance, however, when we remember that other common foods—namely, eggs, peas, beans, lentils, and nuts—are rich in the same vitamin.

"The most serious error introduced into this advocacy of wholemeal bread is the impression given that white bread contains none of this vitamin at all. The truth is that, although white flour is practically free from vitamin B, yet since yeast is extremely rich in this vitamin, white bread contains it. Both forms of bread having been subjected to the same heat, neither has the advantage of the other in regard to the partial loss of vitamin on this account."

Confectionery Advertising.

In a former issue of FOOD MANUFACTURE we referred to the opportunities in the food industries for co-operative advertising. What we said about the advantages to be gained from adopting this policy applies with particular force to confectionery, and also to bakery products. The ways of business, and especially big business, have changed. The modern tendency is for the units of any particular branch of industry, instead of dissipating their energies in unorganised, internal warfare, to organise and combine against competition from foreign sources, or from, in this case, rival foodstuffs.

A man's business foes to-day are not of his own household, but of other related and competing industries. Men in control are needed who have the broad and long vision, who can see the possibilities of market extensions, who are free from a rooted antagonism to modern ideas and a blindness to modern conditions and requirements. The narrow, niggling hand-to-mouth spirit of the old style is quickly giving way to the broader and more scientific spirit of collecting scattered forces into organised combinations, of reducing costs and selling prices by dint of co-operative research and interchange of ideas, and of joint action in marketing and advertising. If people spend more on fruit, they will spend less on sweets; if they eat more potatoes, they will eat less bread, and so on. The forces of commerce are reorganising and regrouping themselves in somewhat the same fashion as did the political elements of Europe during the past hundred years or so.

Brighter Shop Fronts.

The possibilities of the shop-front as a factor for promoting sales do not, except in a few instances, appear to have been realised, much less developed

and exploited. On the other hand, window displays, generally speaking, show evidence of skill and ingenuity. The shop-fronts of even our principal thoroughfares are stamped, one after another, by a sameness and dulness.

At their best they do nothing more than make a feeble attempt at impression and expression, in spite of their obvious potentialities in these directions. Is this because we lack the courage to liberate imagination from the bonds of convention, or are we too parsimonious to pay the fees of competent architects? The shop-front affords a particularly good subject to the designer. If it pays, as it does, to employ a first-class window-dresser, then it will surely pay to employ a first-class architect. There are big rewards awaiting those who will expend as much money and brains on the "frame" as they do upon the "setting." The truth of the matter is that the proprietor has sadly neglected and underestimated the possibilities of the shop-front as a sales factor.

Then again, brighter shop-fronts mean brighter streets. The scope is unlimited. Materials and style offer a boundless field for the exercise of ingenuity and power of expression.

An American View.

In the course of an address to the Associated Retail Confectioners' Association Convention at Philadelphia, Mr. L. W. Wheelock said that during his first year in the candy industry he was particularly impressed by three things. The first was that the advertising could keep a little, but not much, ahead of the manufacturing end, and that the latter would live up to the promise and boast of the advertising. The second was the need of accurate cost accounting. The third was the need of scientific control of the business through a chemical laboratory, and the daily careful testing of raw materials and batches. Mr. Wheelock witnessed the successful working out of these ideas—but with one important exception, and this is where the future of the manufacturer is concerned.

It has not been proved that the trained chemist has shown any genius, as it was hoped he would, in the vital matter of making up new candies. He had watched a succession of chemists. They have been splendidly worth while, and had done great things in improving products. Thus, the U.S. Government chemists have recently made a contribution in the use of the new inversion formula. But the chemist has lacked the genius of originality—of creating new things.

Mr. Wheelock considers that the big rewards of the future will go to those who will give the public those new things, new ideas, new tastes, for which it craves and for which it is willing to pay generously.

The Confectioner's Opportunity.

We do not consider that Mr. Wheelock is correct in ascribing to a lack of originality this so-called failure on the part of the chemist to produce a dazzling display of new products. There is probably a confusion as to the meaning of the term "chemist," together with a misunderstanding of the functions of the "real" chemist, such as are engaged upon research into fundamentals in public or State institutions. If the chemist has not produced the results desired by Mr. Wheelock, it is simply because the former has no claims to the title of "chemist," or because he has not been given the facilities for the work of creating new things. One has only to recall the brilliant creative work of the chemist in the dye and cellulose industries, the hardening of vegetable oils, and the fixation of atmospheric nitrogen, to realise what the right man working under the right conditions is capable of doing. The confectionery industry has none of the advantages of its very much younger brothers; it has grown up into an age of scientific methods, and the process of adaptation has been difficult and slow. As yet, it has scarcely emerged from the relatively early stage of scientific control of materials and processes, and the creative work at the hands of the scientist is still to come. Of necessity, this latter must depend on a thorough knowledge of fundamentals, and research into this difficult matter has not proceeded very far. The only way to speed it up, and so prepare the groundwork for creative work, is to get more men of the right type into the industry and to give them the time and materials for real research work—not merely routine testing and analysis.

American candy-makers are reported to be "fast becoming practical candy chemists." It is said that, "old-line, practical candy-makers, whose earlier vocabularies bespoke 'strong sugars' and 'doctors,' to-day converse with equal freedom on hydrogen ion concentration, colloidal disintegration, and the activities of enzymes."

Enzymes in Flour.

Enzymic activity is a matter of the greatest importance in flour. Flour contains many enzymes, but only two classes are of first importance. Firstly, there is the diastase, which is probably not a single enzyme but a group. The diastase acts on the starch, and has a saccharifying action. Secondly, there is the protease or proteolytic enzyme, which acts on the proteins and tends to dissolve them. These two actions are directly connected with the strength problem, and require attention, especially as enzymes are sensitive to heat.

In fermentation, the yeast acts on the sugars

present in the flour to give the carbon dioxide necessary for the expansion and aeration of the dough. Flour contains many sugars. It undoubtedly contains some cane sugar, which can be inverted in the usual way. The amount present varies from 1 to about 2½ per cent. Then there are present maltose, dextrose, and other common sugars, probably present as a result of previous diastatic action.

Boiled Sweets.

Speaking of the preparation of hard candy, Dr. Bryant advises the addition of about 1½ ozs. of fat or oil per 100 lbs. to the sugar boil to prevent scorching and to ensure easy boiling and freedom from large bubbles. Boiling should be carried out as rapidly and at as low a temperature as possible. On the other hand, if the water content reaches 3 per cent. owing to inadequate boiling or to subsequent absorption from the air, the product will grain or become permanently sticky. Scorching increases the amount of inversion very rapidly, and lævulose is a thirsty substance.

As pointed out by Mr. Backes in this issue, time and temperature both have a great influence on inversion. Another important factor is acidity, since this, too, influences inversion. In order to counteract any acidity a drier is sometimes used, but with discretion, since too much causes scorching and discoloration, and some driers may leave traces of sulphur dioxide. Dr. Bryant recommends a little lime water or a very little sodium acetate. Then again, attention should be given to the nature of the factory water. The presence of lime is beneficial, whilst sodium or lime chlorides are harmful in causing inversion.

The first effect of the absorption of moisture is the production of graining (crystallisation), accompanied by the loss of a lustrous and glossy surface. Crystallisation starts at the surface, but spreads throughout the whole body of the sweet.

Sugar Boiling Problems.

The problems of hard sweets might be put this way. The object is to produce a non-crystallisable and non-hygroscopic product—permanently clear and lustrous. Pure sugar (sucrose) crystallises or "grains" very readily in supersaturated solution.

Certain substances, such as glucose (dextrose + dextrine + maltose) and invert sugar (dextrose + lævulose) retard or prevent this crystallisation. The glucose may be added directly, or the invert sugar may be produced in the boil from the sucrose by inversion brought about by the catalytic action of the hydrogen ion. The latter may come from an added acid, acid-salt or glucose.

So far this is excellent, and the amount of inversion is under control, since it depends on the concentration of the hydrogen ion and the time and temperature of boiling. But the trouble is that glucose and invert sugar, while they perform this very desirable function of suppressing crystallisation, have the unfortunate property of absorbing moisture. They exchange one evil for another. Glucose is not as bad in this respect as lævulose. One thing is clear. The hydrogen ion should be neutralised as soon as it has performed its function of inversion to the desired extent. There may be possibilities in further investigating the action of alpha amino acids like glycocol and alanine, which have been shown to counteract the destructive action of alkali on dextrose and lævulose and the invert action of hydrochloric acid on sucrose.

Will the chemist succeed in finding a non-hygroscopic substance which prevents devitrification of boiled sweets? We believe he will. Something has been done already; Kusnetzow observed that potassium carbonates hindered crystallisation, and Robert Whymper found that ammonium chloride had the same effect.

Sugar Testing.

The *Manufacturing Confectioner* has devoted several pages to the question of simple tests for comparing the qualities of sugars intended for boiled sweets. Only sugars of the highest purity should be used, for even the fraction of one per cent. of impurities, like moisture, invert sugar, lime salts, and gums, has a considerable effect on the changes that take place during boiling. "Weak" sugars having a relatively high percentage of impurities increase inversion and hasten caramelisation at high temperatures. "Strong" sugars are relatively resistant to inversion. The surprising effect of very small amounts of impurities is illustrated by the "strengthening" and whitening action of one-thousandth per cent. of soda.

J. A. Ambler describes a test which consists essentially in heating to 350° F. the sample of sugar (half pound) and distilled water (9 ozs.) in a copper basin over a regulated burner for a definite time (25 mins.). The melt is poured on to a polished copper slab, left to cool, and then examined. If a chamber of constant humidity is available, a comparison of the "strength" of the sugars used may be made by noting the lapse of time before crystallisation starts in the transparent plaques; the shorter the time, the "stronger" the sugar. If it is wished to determine the degree of caramelisation, the plaques may be broken up and portions used for appropriate tests, without waiting for "graining" to occur.

H. Lebeson describes an instrument, the turbidiscope, which may be used to supplement Ambler's test in comparing the qualities of sugars. The average buyer will compare the quality of two sugars by the appearance of the crystals, selecting the whiter and more brilliant of the two. When he dissolves these sugars in water he will often be surprised to find that the one he thought was dull and lifeless gives a clear, colourless solution, while the brilliant sugar shows considerable cloudiness. The turbidiscope is an apparatus for projecting a beam of light through the solution under test. If the solution carries suspended impurities, the amount of these will be indicated by the degree of brightness of the path of light through the sample.

The Bee Culture Laboratory at Washington has devised an accurate colour-grading standard for honeys. The instrument employed in the grading process offers a wide range of uses in the confectionery laboratory. With it the whiteness of standardised solutions of sugars, gelatine, and other materials could be tested.

Starch.

Dr. McCord, of the American Industrial Health Conservancy Laboratories, emphasises the fact that starch containing moisture is a fairly good medium for bacterial growth, and is a better medium for growth of moulds. It is probable that all starches used in the confectionery trade contain mould spores. He advocates that long-stored starch, prior to re-use, be run through the drying machine and held in the heating chamber one hour or more at the highest practical temperature.

Dr. H. File has recently discussed moulding and dusting starch, and their relation to marshmallow manufacture. Moulding starch has a very pronounced influence on the quality of the marshmallow, and the quality of these starches varies according to the processes used in their preparation. A re-dried starch of 7 per cent. moisture content proves satisfactory under normal conditions. Frequently the temperature and humidity conditions of the dryroom are not under proper control; often the starch is warm, but moist, and the marshmallow soft and sticky.

Exhibitions

1927

September 17–23.—London: International Grocers' Exhibition.

October 5–15.—Norwich Grocery Exhibition.

October 28–*November* 5.—Manchester: Imperial Fruit Show.

November 15–24.—London: Universal Cookery Exhibition.

1928

January.—Birmingham: International Grocers' Exhibition.

February–March.—British Industries Fair.

March.—Ideal Home Exhibition.

Import Duties on Biscuits Increased

A recent Decree provides for considerable increases of the Customs duties on biscuits imported into Bolivia. Tariff No. 46, which provided for the admission of biscuits without sugar or butter and common bread at a duty of 5 cents per kilog. gross, is now withdrawn. The wording of Tariff Nos. 47 and 48 has been altered and the duties increased, so that these Nos. now read as follows:

No. 47.—Biscuits, with or without sugar or butter, sponge cakes, puddings, shortbread (*tortas*) and rye bread—1 bolivar per kilog. gross.

No. 48.—Biscuits in fancy boxes—1½ bolivars per kilog. gross

The U.S.A. Pure Food Law (Colours)

The following is a copy of the Food Inspection Decision 209 (Amendment to Food Inspection Decision 184) issued on April 9th, 1927, at Washington by the Acting Secretary of Agriculture.

Food Inspection Decision 184 is hereby amended by adding fast green FCF to the list of permitted dyes contained therein. Hereafter the coal-tar dyes which will be accepted for certification, subject to the provisions of Food Inspection Decisions 76, 77, 106, 129, and 159, shall be the following:

Red shades: 80, Ponceau 3 R; 184, Amaranth; 773, Erythrosine.

Orange shade: 150, Orange I.

Yellow shades: 10, Naphthol yellow S; 640, Tartrazine; 22, Yellow A B; 61, Yellow O B.

Green shades: 666, Guinea green B; 670, Light green S F yellowish; Fast green FCF (p-hydroxy derivative of the sodium salt of alphazurine F. G., C. I. 671).

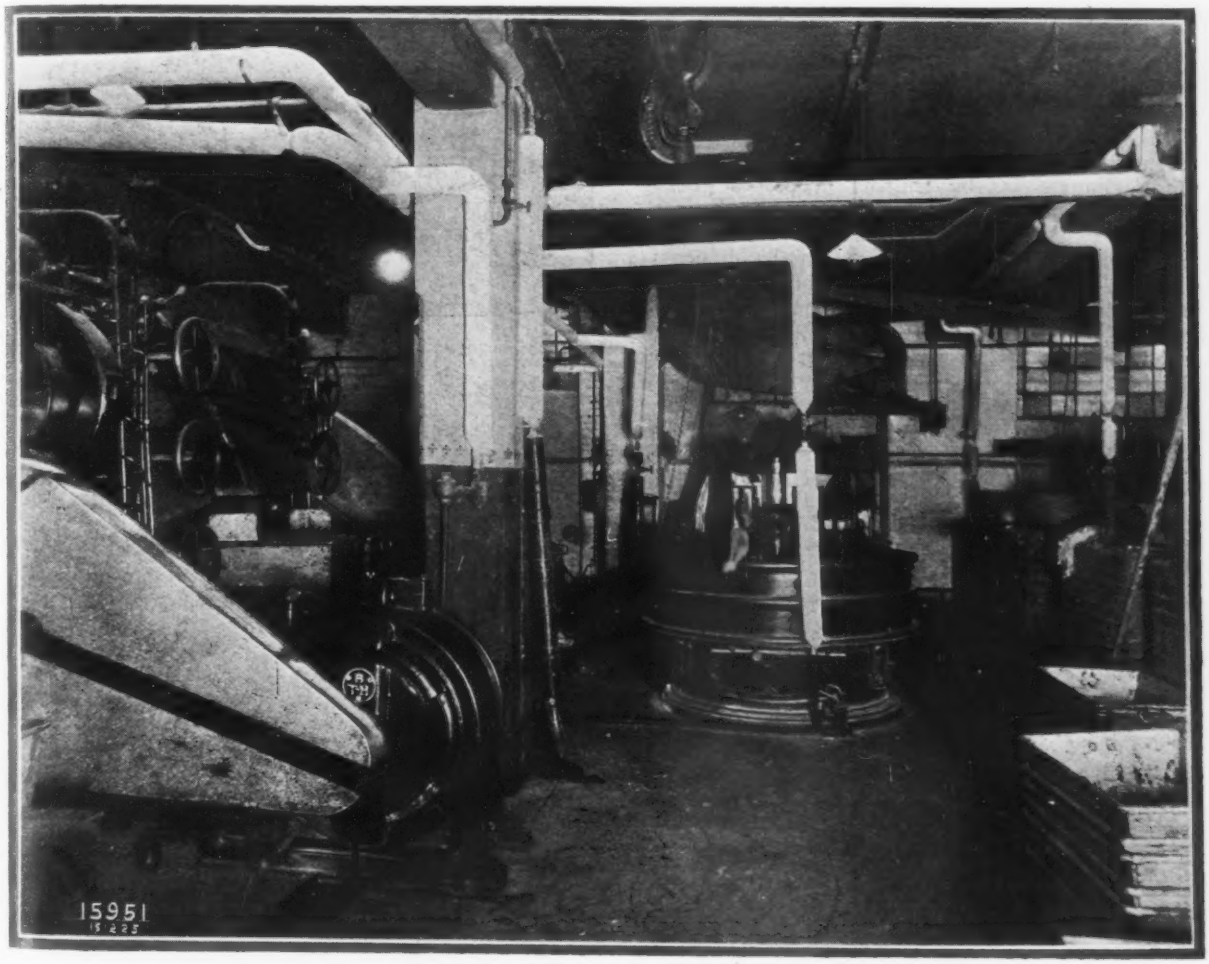
Blue shade: 1180, Indigo disulfoacid.

The numbers preceding the names refer to the numbers of the colours as listed in the Colour Index published in 1924 by the Society of Dyers and Colourists of Great Britain.

Scientific Control in the Chocolate Industry

By H. W. BYWATERS, D.Sc. (Lond.), Ph.D., F.I.C.,
Manager, Slade and Bullock, Ltd., Dewsbury,
Late Chief Chemist, J. S. Fry and Sons, Ltd., Bristol.

The following article reviews the modern aspects of chocolate manufacture, and brings out in a strikingly clear way the scientific principles underlying the subject. The views expressed by the author are highly stimulating, and they suggest the lines along which future advances will probably be made.



Chocolate Making Department of large Confectionery Works, showing B.T.H. motor of 2½ h.p. with chain drive to Chocolate Making Machine, and a 25 h.p. motor on wall brackets, which drives by chain to counter-shafting, and thence by belting, a number of Conches.

IN THE first article I pointed out the importance of maintaining the quality of the raw materials used in the manufacture of a cocoa powder in order to secure a uniform standard product. What has been said regarding the need for constant scrutiny of the ingredients of cocoa powder applies with even greater force in the case of chocolate. Slight variations in the quality of the sugar, for example, may be reproduced in variations in the flavour of the finished chocolate, whilst the substitution of beet sugar for cane sugar, or *vice versa*, will be at once detected by the expert familiar with the subtle characteristic flavour of the standard article. The adherence to definite specifications for all the ingredients of high-class chocolates and chocolate-covered goods is demanded in the modern factory, and scientific control at this stage will go a long way towards the attainment of that uniform excellence of the finished goods which is one of the chief aims of good management.

Nature of Chocolate

After dealing with various stages in the manufacture of chocolate where scientific supervision will be desirable, I propose to refer briefly to one or two recent developments in our knowledge of chocolate which have called forth attempts to control in a scientific manner processes which formerly were either omitted altogether or were carried out haphazardly by rule-of-thumb methods.

Chocolate may be regarded as an intimate mixture of roasted cacao bean and sugar, both in a finely divided state, with the addition, probably, of a little cacao butter and flavour. It consists essentially of a solidified suspension of minute particles of sugar and cacao matter in cacao butter. At first sight, the manufacture of chocolate might seem to be a simple matter, but it must be borne in mind that sugar and fat, like flour and water, do not readily mix, and, at present, they can only be brought into the state of a homogeneous mass by lengthy processes of more or less vigorous stirring and grinding.

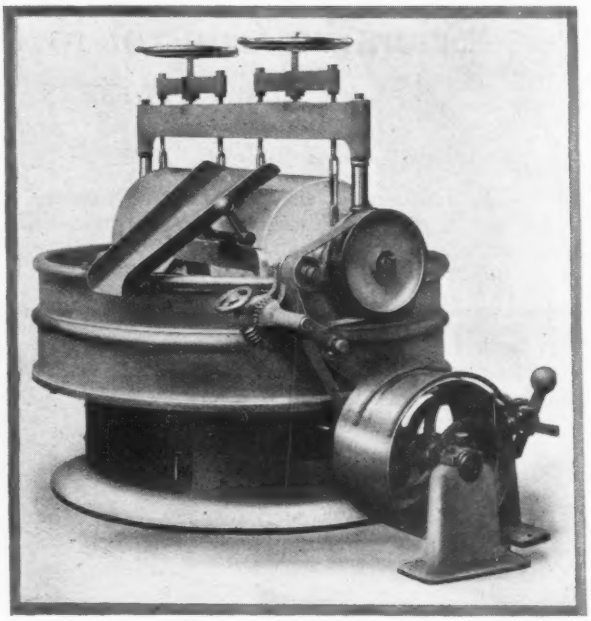
Some of the characteristic properties of chocolate may be explained on the assumption that it consists of a kind of emulsion of minute sugar and cacao particles in a fatty medium. Unfortunately, although there is an enormous literature dealing with aqueous suspensions and emulsions, very little work has been published on the properties of emulsions and suspensions of particles in fatty media, but it is safe to say that research work in this direction, with the co-operation of the chemist and the engineer, would lead to revolutionary changes in the present methods of chocolate manufacture.

Size of Particles

Keeping this picture of the nature of chocolate in mind, it will be seen that scientific control in manufacture is capable of being exercised along at least three lines. In the first place, it is extremely desirable to check the size of the sugar and cacao particles, by actual microscopic measurement or in other ways, to ensure the maintenance of the requisite "fineness" in the finished article. Indeed, it will be found advisable to measure the sizes at each of the various stages of manufacture and thus make sure that each of the successive refinings or other processes produces the desired effect in reducing the crystal or particle size. The accurate measurement of crystal and particle size requires considerable technique and practice, but by adhering to a definite routine method consistent results of undoubted value may be obtained.

Proportion of Fats

The second obvious factor demanding control is the composition of the mixture, especially the proportion of fatty material. It will be found that comparatively small variations in the proportion of fatty to non-fatty matter may profoundly affect the behaviour of the chocolate in the factory, especially when it comes to be used for covering purposes or for moulding into bars, eggs, or other forms.



Chocolate Melangeur, with Roll Lifting Gear and Auto-Discharge.

By courtesy of Messrs. Baker Perkins, Ltd.

Fluidity

Perhaps an even more important contribution the chemist can make to the smooth running of the factory processes is to institute a check on the relative fluidity of the chocolate. The fluidity of chocolate is a very important property from the standpoint of the manufacturer, because it determines the ease with which it can be used in machines or mechanically transported through the factory, and upon it depends largely the thickness of the chocolate covering on the chocolate-covered goods. The more fluid the covering, the thinner it will be, and the greater the amount of centre which can be covered by a pound of the chocolate. The chocolate can be made thinner by mixing with it a proportion of cacao butter, but cacao butter is expensive and there are other ways known to the chocolate manufacturer by means of which the desired increased fluidity can be brought about. The fluidity of chocolate can be measured by suitable modifications of many of the standard instruments for determining the viscosity of liquid fats and oils, and in most cases only relative values are required for comparison with the standard chocolate. It is beyond the scope of this article to go into details regarding the precise methods which experience has shown to give the most useful results. It is sufficient to say that methods are now available for estimating the principal constituents of chocolate, as well as for measuring some of its principal physical properties, with such rapidity as to permit of the tests being completed whilst the chocolate is still in course of manufacture, and thus enable any correction to be made before the chocolate is actually finished.

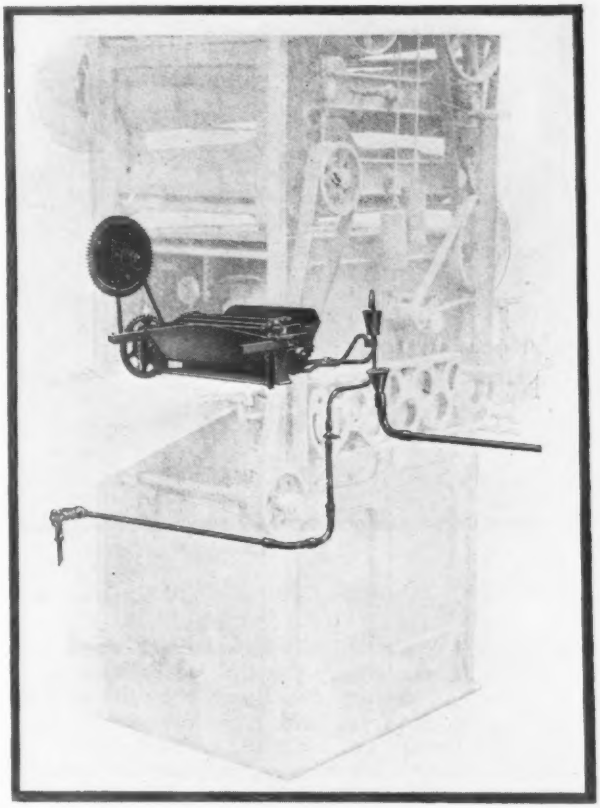
Temperature and Extent of Grinding

The finer types of chocolate usually undergo the process of conching or of melangeuring, during which the chocolate is submitted for many hours to rubbing and grinding actions at possibly high temperatures. The actual temperature at which these processes are carried out has an important effect on the flavour of the finished chocolate. The temperature, therefore, of the chocolate should be taken at definite intervals, and every effort made to bring and keep the chocolate at that temperature which has been found to give the best product. The extent of the grinding action should also be checked by microscopic measurement of the sugar crystals before and after the process. Only by constant attention of this kind can chocolate of standard flavour and quality be obtained.

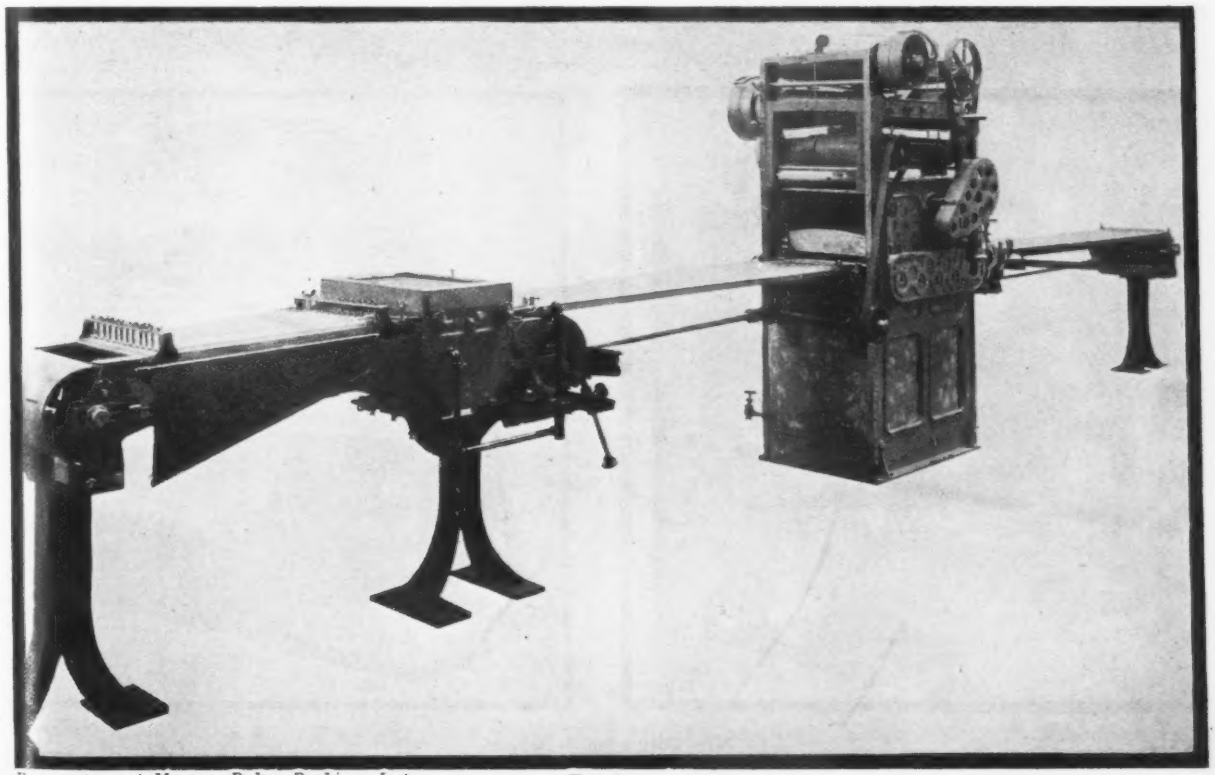
From what has been said, it will be apparent that the chemist, by his tests, can check the efficiency of the various manufacturing processes; he can show whether they are being carried out properly, and whether any of them might, in future, be eliminated, or, with advantage, be repeated. Apart from the actual manufacturing processes, however, scientific control is becoming more and more necessary in the application of the chocolate for covering and other purposes.

"Fat Bloom"

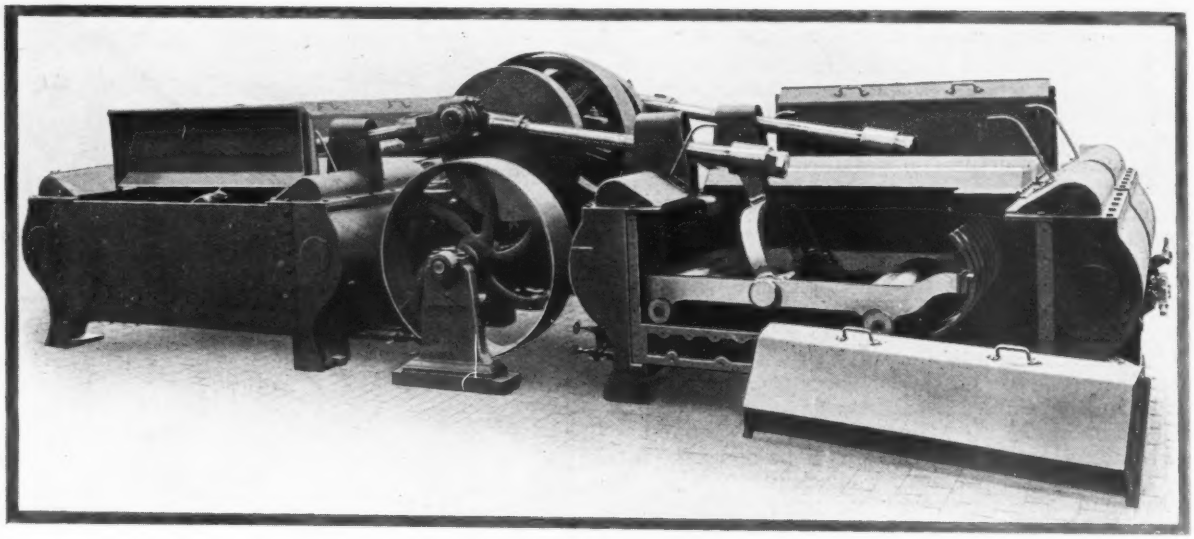
It has been known for a long time that the greatest care must be taken to bring the chocolate to the proper temperature before attempting to use it for covering goods. In spite of the greatest care,



The Finistherm Attachment.
By courtesy of Messrs. Baker Perkins, Ltd.



By courtesy of Messrs. Baker Perkins, Ltd. **Enrober.**

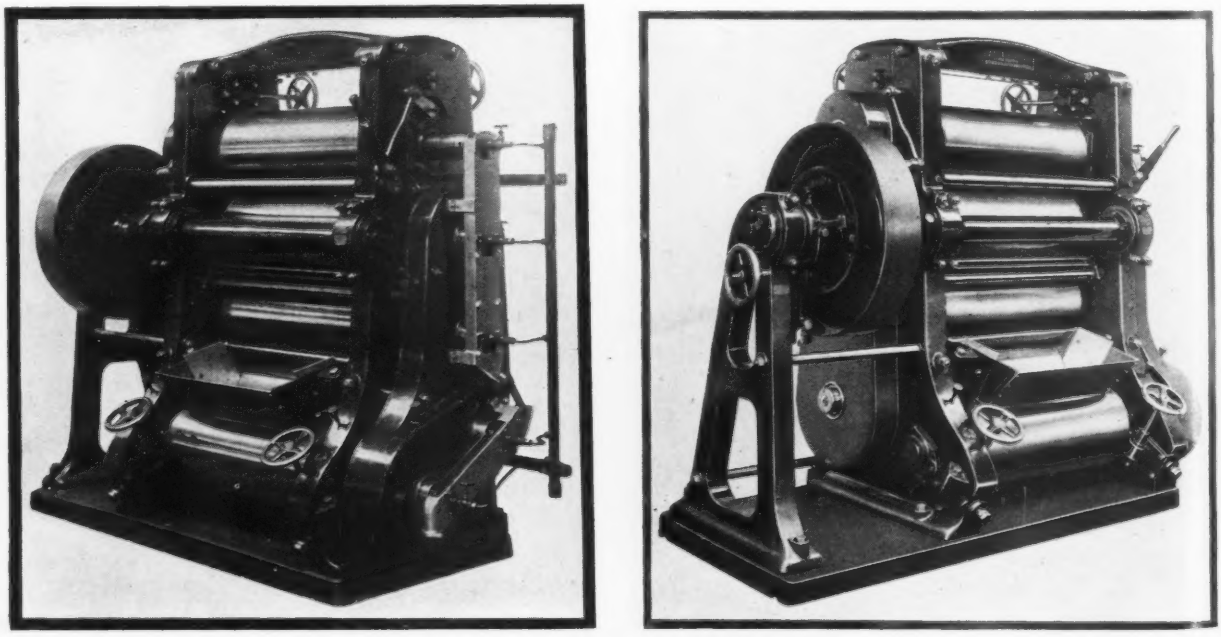


Rowntree-Baker Conche Machine.

By courtesy of Messrs. Baker Perkins, Ltd

however, it has occasionally happened that although the finished chocolates at the time of packing were, apparently, in perfect condition, they have been found to be covered, within a few weeks after leaving the factory, with a thin, whitish, dust. This white film consists of minute crystals of fat, and, in a recent communication to the Society of Chemical Industry, Whymper and Bradley have discussed the cause of the appearance of this "fat bloom," as it is called, and have stressed the importance of properly preparing the chocolate before use if a satisfactory, stable product is to be obtained. Whymper recommends agitation at a definite temperature and seeding the warm chocolate with previously separated chocolate or cacao butter. There are other ways of bringing about the desired result, but they all demand most careful scientific supervision if they are to be successful. According to Whymper, the aim must be to induce the formation of the "bloom" crystals whilst the chocolate is still liquid, and if this is effectively carried out, their formation after the chocolate has set does not occur, or only to a much less extent.

(Continued on next page.)



New Design 5-Roll Refiner.

By courtesy of Messrs. Baker Perkins, Ltd.

English Confectionery

The following is taken from an article which recently appeared in an American journal.

AT PRESENT probably toffees and gums form well over half the candy manufactured, if moulded chocolate is excluded. As regards boilings, the day of the pan is passing, and continuous vacuum cookers are becoming standard equipment. If the weather is dry and cool, it is possible to use half and half glucose and sugar, but as the changing seasons produce more trying conditions, it is necessary to increase the proportion of sugar; by slow steps this rises to 80 lbs. of sugar and 20 lbs. of glucose.

The finer grades of hard candy, satin finished plastic work, and buttercup are run with pure sugar and cream of tartar. By using invert sugar to replace the cream of tartar, it is very easy to make these straight sugar goods on the same type of cooker, and this method is coming rapidly into favour.

The most popular of the hard goods from the selling point of view are clear drop, plastic work, and walnuts dipped in a toffee mixture. The plastic goods were first the familiar jam and nut filled Vienna bon-bon, but cheap competition killed this line, and the pieces have been replaced by a rather nice appearing combination of a high-pulled centre jacketed with clear, hard candy; the centre is generally very acid and flavoured with some iniquitous imitation fruit flavour.

The prejudice of the manufacturing trade is peculiar on the point of plastic goods. Almost without exception we find that high-grade goods must be pulled by hand and put through the single presses, while the cheaper ones are machine pulled and run through a continuous press. Where the high-grade goods are the real old Vienna bon-bons of a thin shell filled with semi-liquid centre, these precautions are readily understood, but where the shell is thick and the centre quite hard, or comparatively so, it seems rather amusing. Frequently, even the manufacturer himself cannot tell on inspection of the goods whether they have been run on the continuous press or on the hand press.

From the general line of hard goods there stands out three items worthy of consideration. First, the toffee-covered nut goods which are dipped with a fork in a pot. The labour would be so high as to make them almost impossible of marketing as a popular line in America. The second piece is known as Fox's Glacier Mints. These are quite different from anything seen in America, and are really a very appetising and attractive proposition. The third line is composed of the justly famous English toffee. They are really nothing but a poor caramel cooked to about 280° F.; the nearer they approach to a real caramel, the better are they considered.

In the case of Fox's Glacier Mints, the candy is cooked on high-pressure gas stoves, and poured out about $\frac{5}{8}$ inch thick on to steel slabs. When the goods become slightly set a frame is dropped down on top, which presses them into shape and leaves the slab heavily scored ready for breaking. This piece has exceptional merit, as the clear icy-white with the cooling peppermint flavour is a delightful combination in summer.

English toffee is so extremely varied in composition as to be difficult of a simple description. The term includes anything from a molasses kiss to hard butterscotch, but the generally accepted article is a high-cooked caramel. It is made of sugar and glucose and milk (generally skim milk). A cheap formula might easily call for 60 lbs. glucose, 40 lbs. Y.C. sugar, and 6 lbs. skim milk powder. In this case a little coconut fat and some flour would be added to keep it from sticking to the teeth, and to make it somewhat opaque and milky in appearance. A really good toffee, on the other hand, might well be made from 80 lbs. sugar, 20 lbs. glucose, and 35 to 40 lbs. full cream milk powder.

(Continued from previous page.)

Several ingenious mechanisms have been devised to carry out automatically this preparatory process. The Finistherm is an apparatus which can be attached to an ordinary chocolate enrober. It consists essentially of a cool roller upon which a portion of the chocolate falls and becomes more or less solidified before passing into the main chocolate stream, and may, therefore, be expected to carry out the desired preparatory process as outlined by Whymper.

Influence of Atmospheric Conditions

Not only is the temperature at which the covering chocolate is used of importance, but also the temperature to which the chocolate-covered goods are exposed after the completion of the covering process. Most manufacturers rely on a temperature of about 60° F. If, in the summer-time, the temperature greatly exceeds this limit, the chocolate will cool too slowly, partial separation of the cacao butter occurs, and the surface becomes "blotchy." On the other hand, if the chocolates are cooled too rapidly, the gloss of the finished chocolates is not retained, especially if they are brought subsequently into a warmer, moister atmosphere. Indeed, the condition of the atmosphere in the factory, both as regards temperature and humidity, exerts such an influence on the finished chocolate that many large manufacturers, especially in America, have installed machinery for controlling the state of the atmosphere in their factories by maintaining it automatically within certain ranges of temperature and humidity which have been found to give the most satisfactory results. By means of such an installation, the output of chocolates of perfect finish can be maintained, no matter whether outside the factory it is raining or snowing or so hot as would necessitate the stoppage, under ordinary circumstances, of all operations involving the use of chocolate.

Foodstuffs from Yeast

By DR. STANLEY SMITH, O.B.E.

The author draws attention to the need for more enterprise in the preparation of pure, unmixed yeast extracts as an article of diet, and makes a plea for the marketing of these extracts as such. He also indicates how to detect the addition of yeast to meat extract.

ALTHOUGH IT has been known for many years past that yeast, subjected to suitable treatment, is capable of being manufactured into a highly nutritious foodstuff, yet it is only within quite recent times that this industry has shown any encouraging developments. In France, as also in Germany, the value of yeast products is acknowledged both by producers and consumers, whereas in this country it has taken years of persistent and courageous propaganda in order to procure the excellent business conditions in yeast pastes and extracts.

The reason why this promising industry has been slow in securing its reward may possibly be found in the difficulty and expense of collecting the surplus output of our breweries and distilleries, and in the fact that yeast, even after pressing, contains nearly 70 per cent. of water, and is a very unstable commodity.

If we accept the figures calculated a few years ago by Feron, it would appear that of the 305,000 tons of yeast annually produced, no less than 173,000 tons are wasted. The remainder is, of course, utilised in breweries, distilleries, vinegar factories, and, to a certain extent, as bakers' yeast. To-day, this wastage of yeast only occurs in places where difficulties of collection and transport negative the value of this raw material. It may be accepted as fact that the demand for the yeast surplus of large towns, where production is both constant and concentrated, is far in excess of the supplies available.

The chemical analysis of yeast extract at once reveals its potential value as a foodstuff for human consumption. It also discloses the similarity of this extract to the corresponding meat product. There is no doubt that a great deal of the prejudice against which the yeast extract industry has had to contend is due to the fact that it is quite possible to make preparations from yeast which are indistinguishable by the public from genuine meat extracts. In flavour, odour, and appearance, meat and yeast both yield an extract which can only be differentiated with certainty by an expert chemist. This, however, furnishes no excuse for those early traders who mixed the two extracts and sold the product as a pure meat derivative, or, by way of an alternative, attempted a sub-fradulent trade by cloaking the origin of yeast extracts under names obviously only admissible in the case of true meat preparations.

It may be said that these mistakes have, for the most part, been rectified. An article of peptone diet, so excellent and nutritious as that now prepared from yeast, may be likened to the good wine which "needs no bush." In other words, suitable and skillfully made yeast extracts should and would sell on their merits. The difference between meat and yeast is purely a chemical difference, and, as we have said, it is not discernible by the consumer. As a matter of fact, the yeast extract is slightly poorer in proteids as compared with the corresponding meat product: but despite this, the food value is almost identical, whilst taste, smell, and appearance are precisely the same in each instance.

In order to detect the addition of yeast to meat extract it is necessary to enlist the services of an expert chemist. The determination is not an easy one, but the safest guide would appear to consist in the presence of certain degradation products peculiar to yeasts and not found in meat extracts. The nucleins of yeast undergo extensive decomposition, and the so-called nuclein bases are thereby released. Of these, adenin and guanin occur in comparatively large quantities in yeast extracts; on the other hand, these two bodies, adenin and guanin, do not appreciably occur in meat extract.

The ingenuity of inventors has been prominent in the matter of utilising waste yeast, and the "protected" products range from cattle foods to an artificial "coffee." But in reality, yeast is so valuable from the human foodstuff point of view that this aspect of the question demands increasing commercial attention, specially as the yeast residues, subsequent to extraction of the meat-like constituents, can be compounded into a valuable cattle fodder. Perhaps enough has been said for the moment to help foster the young and promising industry, but one might usefully conclude with a note of advice and warning. Learn the lessons of past experience, and never attempt to market the yeast extracts as anything but what they actually are. There is no occasion for mystery in dealing with so pure and so valuable an addendum to the foodstuffs of the people.

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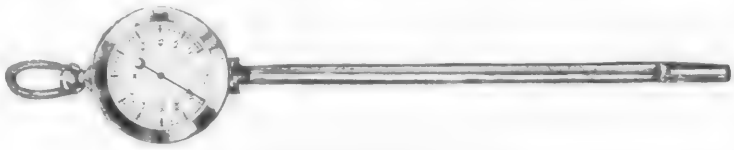
Accurate Temperature Measurement in Sugar Boiling

By J. VALENTINE BACKES, A.R.C.Sc., A.I.C., D.I.C.,
Chief Chemist, Messrs. Fullers, Ltd.

Successful sugar boiling is largely a matter of accurate temperature measurement and control, since small variations in temperature may cause big differences in the nature of the product. The article below shows that the crude methods of control, still largely employed, are totally inadequate, and that it is a commercially sound proposition to replace them by the scientific methods and instruments which are now available.



Long Stem Dial Thermometer.
By the courtesy of Negretti and Zambra.

IN PRACTICALLY every branch of the food industry application of heat plays an important part in the technical processes of manufacture. Thus, the consideration of accurate temperature measurement is such as may help to bridge the gap between success and failure. More often than not, the cause of defects in manufacture is not too obvious, and to say they are due directly or indirectly to temperature errors may seem on the surface to be ludicrous. Yet on a closer survey the "less likely" becomes the "most obvious."

In the confectionery industry accurate temperature measurement is of primary importance. The manufacturer realises from painful experience in the past that the differences in an article capable of being produced by variation of temperature are as numerous as the possible solutions to the modern cross-word puzzle. What he requires is to obtain the desired product first time and every time, and not to be worried with the intrusion of undesirable possibilities. Thus a means of accurate temperature measurement is not an idealism, but an essentiality from both the economic and the sound production standpoints.

Before describing the ideal methods of temperature measurement, it would be as well to describe briefly the more common everyday methods used in many factories, and to point out the likely errors and pitfalls underlying them.

The "Hand Test" for Sugar Boiling

This method of taking a portion of the cooked mass and rapidly cooling it in water, the toughness or texture determining the cook or final temperature, is perhaps the oldest, and it is one which has stood the test of time. Applied to specific cases, it aims, more or less, at reliability in the hands of *any one individual experienced worker*. It is, however, not so reliable when spread over a group of workers, for it then becomes dependent on the individual. Opinions as to the cook of any one batch may vary to the extent of four degrees or more. If one refers to the temperatures corresponding to the terms "soft ball," "hard ball," "crack," etc., published in various journals and textbooks, it will be realised how inconsistent a method of this sort may become. Moreover, variation in the temperature of the water used for cooling the portion of the cooked mass is sufficient to alter the toughness or "crack" of the portion being tested. Variations of the order of four degrees do not aim at producing a standard article, hence, identical and consistent results cannot be obtained by such a means of temperature measurement. It is a guide—and in many cases an excellent guide—but it cannot be said to be accurate or consistent.

The Sugar Boiling Thermometer

The advent of the ordinary brass-cased thermometer for use in sugar boiling was a great advance on the "hand test," and many manufacturers who use it consider they have arrived at the height of scientific efficiency and are getting all that can be expected. But have they considered the shortcomings of this instrument and its sources of error? In the first place, it is practically impossible to read the thermometer accurately without stopping the boiling. Owing to its shortness (10 to 18 inches) it is always enveloped in a cloud of steam, and to attempt to get sufficiently near the instrument to obtain a true reading means running the risk of splashing from the boiling mass. Thus a not uncommon habit in the factory is to take the thermometer out and read it quickly in the hope that the mercury will not run back. The inaccuracies of such a practice are obvious.

Another failing of the brass-cased thermometer arises out of the shield or guard which protects the bulb. When the thermometer is placed in a "high boil" batch, the brass case, being cold, suddenly chills a portion of the mass, which cakes on the

shield and prevents the boiling liquid coming in constant contact with the bulb. Again, oftentimes the mass is so viscous that a constant flow cannot penetrate the shield and get to the bulb of the thermometer. In such cases the thermometer may read as much as 10 degrees lower than the actual temperature of the mass. Ten degrees in high boiled goods can make a vast amount of difference in the final products and their keeping properties.

These remarks only apply to the ordinary 10 to 18 inch brass-cased sugar boiling thermometer which is still in common use in some factories. Many improved types are now on the market which overcome all these defects. The most efficient is the long stem dial thermometer, sometimes called a jam boiling thermometer.

The Long Stem Dial Thermometer

This instrument is familiar to many manufacturers, but for those who have not used it a description and a word on its advantages may not be irrelevant. It is made up of a 3 ft. coppered steel stem, on which is mounted a 3 to 4 inch dial. Temperatures are indicated by a pointer or "hand" which travels over the scale marked on the circumference of the dial. These thermometers are made with any range most suited for the job. The advantages of such an instrument are:

1. Accuracy and ease of reading. It is possible to read the instrument with ease to one degree or less. The dial comes well out from the pan, and risk of splashing from the boiling mass is prevented.

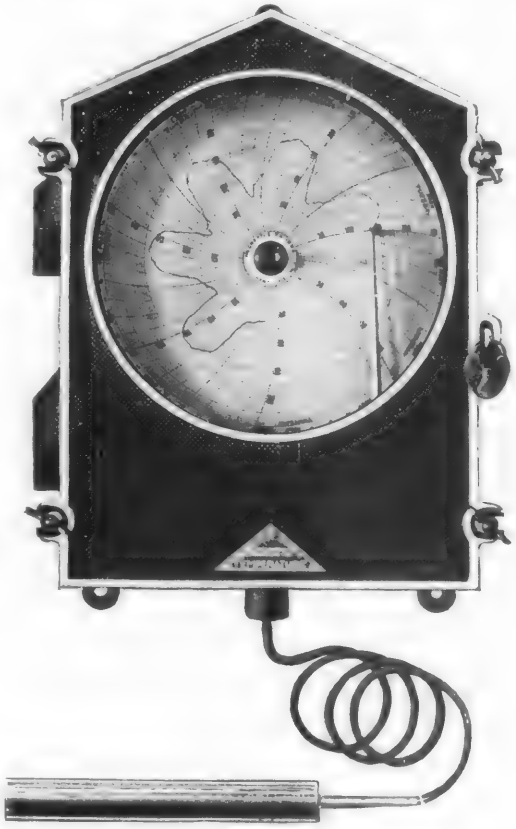
2. True temperature. The mass is in constant contact with the metal bulb, thus a true temperature is always recorded.

This instrument is more expensive than the ordinary thermometer, but the slight extra expense cannot be contrasted with the greater efficiency and more reliable work which can be turned out in the lifetime of such an instrument.

Sugar Boiling—Duration of Boil

In sugar boiling, more particularly for fondant cream, another factor enters into manufacture which calls for a thermometer which not only records the temperature, but also *the time* or *duration* of the boil. The length of time a batch of sugar is boiling has a vital bearing on the initial result.

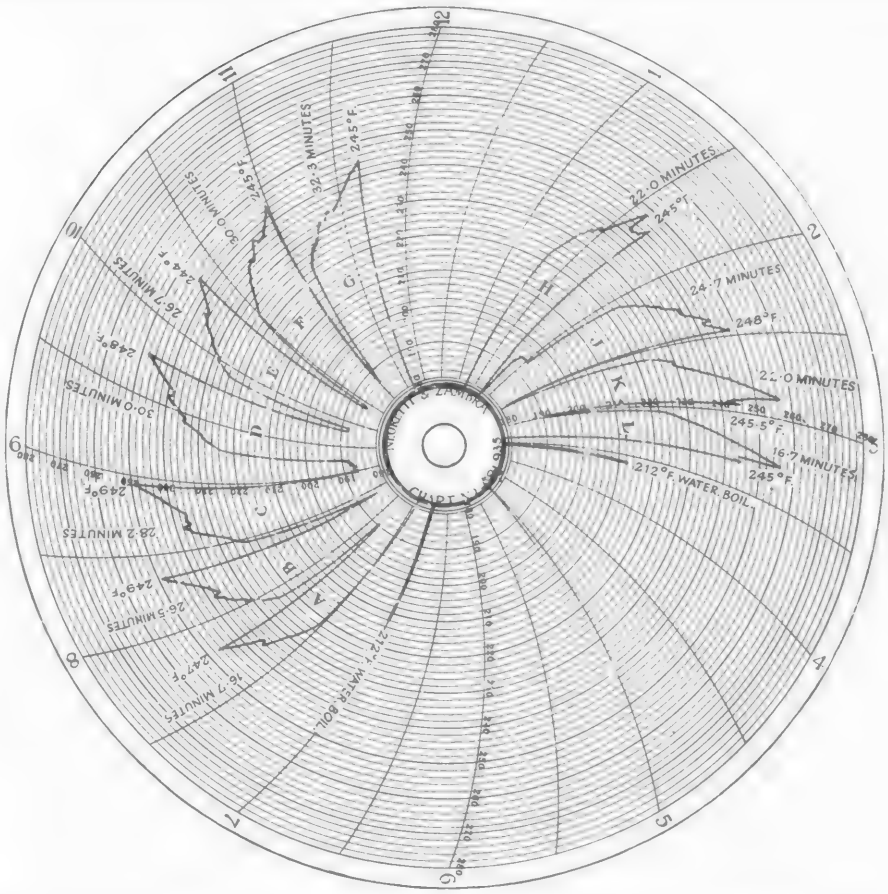
When sugar is boiled a portion of it is broken down into other types of sugar compounds, levulose and dextrose, the former of which retards recrystallisation of the sugar (sucrose). The levulose breaks down still further to levulinic acid, which in turn acts on the sugar (sucrose) and decomposes or inverts it. Thus the sugar is being continuously weakened on the compound interest basis. The obvious result is that the longer a batch is boiling, the more sugar is broken down and the "weaker" it becomes. Moreover, the compounds formed by this breaking down give rise to colour, and the batch becomes brown. Thus, to obtain a "strong," short fondant having a good, white colour, the boiling must be carried out in the shortest possible time. Factors which influence this are, steam pressure on the pan and the amount of water used to dissolve the sugar. The former should be as efficient as possible, while the latter should be calculated so that only a minimum is used. This not only improves the result, but saves time and fuel. In the case of "acid" fondants, this "time factor" becomes more important still, for the time of boiling definitely decides the nature of the finished product, more so than in an ordinary glucose fondant. Likewise, in jam making, the acid in the fruit inverts the sugar very rapidly when boiling, and as much as half the total sugar is broken down if allowed to boil too long. Thus the need for an instrument which records duration of boiling as well as the temperature. Such an instrument is the recording dial thermometer.



Recording Dial Thermometer.
By the courtesy of Negretti and Zambra.

The Recording Dial Thermometer

The principle is in some way comparable with the long stem dial thermometer, only in this case the temperature is recorded on a chart, which rotates by means of a clock movement. Thus, not only is the temperature shown on the chart, but the actual time the batch has been boiling is recorded. It can be filed for reference. The instrument is larger and heavier than the ordinary dial type, and is meant for fixing or suspending. The majority on the market are made with flexible stems. They are ideal if



permanently fixed to the boiling pan, and are the most satisfactory type for chocolate work, fitting on enrobers, conches, tempering kettles, and the like where the instrument is a fixture. From a wide experience of this type they are not to be recommended if they are intended to serve two or three pans, owing to the liability of breaking the flexible lead. In use, a certain amount of sugar syrup adheres to the flexible stem, rendering it less flexible, and so with constant forcible bending it breaks. The breaking of this lead oftentimes results in the breaking of the mercury tube inside, thus throwing the thermometer completely out of gear, the remaking of which is a costly procedure (compared with the initial price of the instrument).

For work, therefore, where one thermometer is to serve a series of pans, a rigid stem type is preferable—the flexible lead being replaced by a rigid copper stem. In this type the copper stem comes out at right angles from the side of the case for about six inches and then drops down again to the extent of 3 ft. The idea of this is that the case of the thermometer will be to one side of the boiling pan when the bulb and stem are suspended in the mass. It is thus out of the way of the steam and can be read more easily. It is advisable to suspend the instrument on a counterpoise weight and mount the whole on a overhead carrier. It can then be moved along from pan to pan and lowered into position as required. Having a thermometer of this kind, the manufacturer has a chart showing the temperature to which each batch has been taken, and also the actual time the sugar has been boiling.

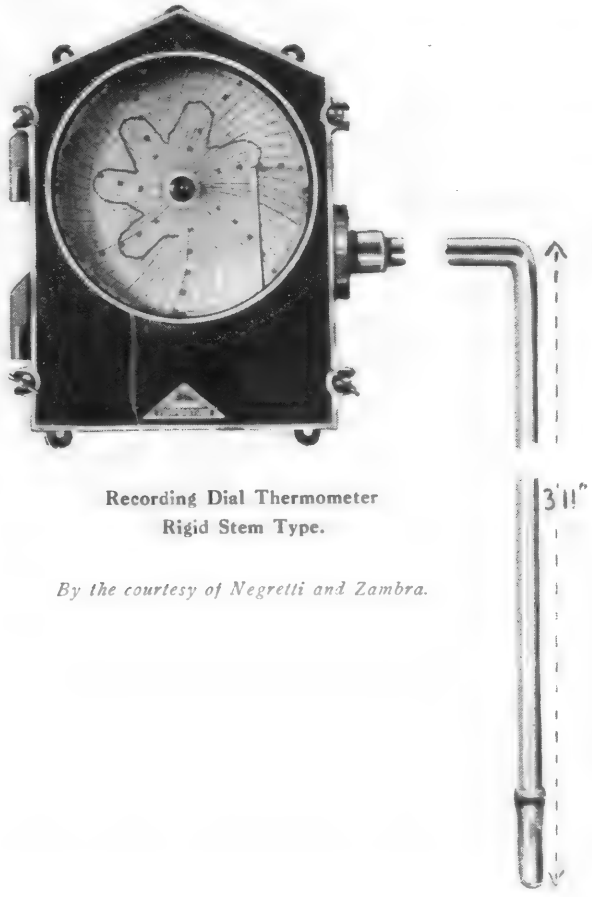
A reproduction of a typical chart is shown. Each section represents the boiling of one batch from start to finish. The last peak in each section shows the final temperature to which the batch has been taken prior to "pitching," and is the actual temperature of the boil of the batch. The time or duration of boiling is indicated by the width of the section, measured from the point when the batch starts to boil. (In the boilings represented by this chart the thermometer was placed in the batch at the moment boiling started.) Batches F and G bear out some of the points claimed for this instrument. They are similar in formula. The accuracy of the final boil is worth noting, both being 245° F. exactly. The duration of the boil, however, varies—batch F taking 2·3 minutes less than batch G. On close inspection of the chart it will be seen that batch F started to boil at 224° F., whereas batch G started at 222·5° F. This difference indicates that batch G initially contained more water, which thus accounts for the extra time required to reach the final boiling temperature. This is also shown in a lesser degree in batches B and C. The chart thus illustrates:

1. The accuracy in temperature measurement obtainable.

2. The bearing the initial amount of water, used for dissolving the batch, has on the duration of boiling.

3. The accuracy of the instrument as shown by the water boil test, done at the beginning and conclusion of the day's output.

The efficiency and control thus produced is a guarantee of obtaining the right product every time. The various errors and uncertainties experienced with the older types of thermometers are eliminated and poor results, due to too long boiling, can be traced and detected. The ease of reading the instrument is also a great asset to the workman, and from the record of the time taken per batch he sees at a glance if he is getting the best out of his pans or whether poor results are due to the engineer through inefficient steam pressure.



Recording Dial Thermometer
Rigid Stem Type.

By the courtesy of Negretti and Zambra.

The majority of thermometer makers now put a recording dial type on the market. The points to note when purchasing are: Guaranteed accuracy, durability, steam- and water-tight case, and good clock movement. As to the clock, if the instrument carries a 12-hour chart, the clock should be such as only requires winding once in five days. This enables the instrument to be "set" over the week-end in readiness for the following week. So many instruments are fitted with 24-hour clocks, which causes much inconvenience.

The Hypsometer.
By the courtesy of Negretti and Zambra.

Adjustment of Thermometers: The effect of Barometric Pressure on the Boiling Point

Yet another factor comes into play in sugar boiling, which must be considered if ideals are aimed at. Manufacturers have possibly noticed the difference in fondant cream made on different days. In each case both batches are identical as far as recipe and thermometer reading are concerned, yet one fondant is "weak" and the other "tough." This is due to the variation of the boiling point with barometric pressure, for although the thermometer registers to the same degree on both days, the figure is subject to a slight correction due to the variation in barometric pressure. A table showing this variation is given below.

Barometric Pressure. Inches.	*Boiling Point of Water.* Deg. Fahr.	*Barometric Pressure.* Inches.	*Boiling Point of Water.* Deg. Fahr.
28·5	209·57	29·7	211·62
28·6	209·75	29·8	211·80
28·7	209·92	29·9	211·97
28·8	210·10	30·0	212·13
28·9	210·27	30·1	212·30
29·0	210·43	30·2	212·46
29·1	210·60	30·3	212·62
29·2	210·77	30·4	212·80
29·3	210·94	30·5	212·96
29·4	211·11	30·6	213·12
29·5	211·28	30·7	213·28
29·6	211·45		

Referring to this table, it is seen that very nearly four degrees variation in the boiling point is brought about by the change in barometer readings experienced in England.

To give a practical example of the bearing this has on sugar boiling, a batch boiled to say 240° F. on the thermometer on a day when the barometer is low (28·5 in.) will actually, in effect, be boiled nearly four degrees higher than a batch boiled to the same

(*Continued on page* 136.)

Marketing Confectionery

The following has been taken from the July issue of the Manufacturing Confectioner. *Written by "An Export Manager associated with one of the leading manufacturers of confectionery in U.S.A.," this article should prove to be particularly interesting to readers on this side.*

EUROPEAN MARKETS, with one notable exception which need not here be specified, are in the main reliable, and there is no foreign field which the American manufacturer can enter with the same feeling of safety as the European field. This is true also, of course, of Canada, Australia, New Zealand, and South Africa, and to a less extent, perhaps, of certain scattered outposts of other European Powers. It is the opinion of this writer that the greatest potential market lies in the Far East, but there conditions are unstable, and Oriental traditions are so different from our own that the beginner in export is advised to keep clear of Asia until after he has cut his wisdom teeth in the European market.

England the Best Market

As a market for American confectionery, England is far ahead of any other country in the world. It is, perhaps, the easiest of all foreign markets for Americans to cultivate, the most remunerative, and generally the most satisfactory. As was pointed out in the first article of this series, during the year 1922, the last year for which statistics are as yet available, 3,360,166 lbs. of confectionery, 11,015 lbs. of chocolate, and 774,385 lbs. of chewing gum were imported from the United States. In other words, one-third of all the confectionery and one-fourth of all the chewing gum exported from the United States in that year went to England. The uninitiated may think, perhaps, that these vast quantities fully exhaust the export possibilities of the English market, but such is far from being the case. English commerce is worldwide in its ramifications. She is older in the export business than we are. Her merchants are constantly seeking and developing new markets within and without her far-flung empire, and much of the candy she imports from the United States is re-exported by her to other countries.

Curiously enough, our best customer, England, is herself a large producer of confectionery, though she is not herself as great a manufacturing nation as we are or as Germany was before the war. But she is the world's greatest middle-man, dealing in every commodity, with every people, in every clime under the sun.

Our gum goods are very popular with all classes over there, and so, too, are our creams, which is quite as it should be, for we probably excel in the manufacture of these two items. The utmost we can claim for our marshmallow goods is that they are holding their own in this market. It must be borne in mind, however, that marshmallow is not as popular a candy over there as it is here. Very little American hard candy is bought in England. Popular taste favours toffee and caramels of local manufacturer and excellent quality.

The English market, as has been said, is our biggest market, but the margin of profit is low. To meet local competition the American manufacturer must take full advantage of the drawback on sugar. Nevertheless, England is by far the most popular of our foreign markets, the most reliable, and, of course, the easiest to cultivate. The language barrier, which in some cases is so difficult to surmount, does not exist here. And there are no arbitrary rules and regulations governing the foreign trade of that country. The English have so long and so successfully wooed the foreign markets themselves that they understand the business better, perhaps, than any other people, and in the case of their own country, have simplified it to the last degree.

According to latest advices, the prices ruling in the English market are: Chocolate bon-bons, 98 cents per lb.; caramels, 42 cents per lb.; fruit tablets, 35 to 45 cents per lb.; peppermint creams (a highly popular confection), 45 to 50 cents per lb.; chocolate almonds, 60 cents per lb., and bittersweet chocolate, 76 cents per lb. The market for gum drops here is practically inexhaustible. The price, however, should be low to meet local competition, which is daily growing more and more acute. American chewing gum is retailed at 6 cents per packet of six bars. The local product in this line, which was practically unknown in England until the war, is much cheaper, but it is of very inferior quality. The market for chocolate is almost entirely in the hands of local manufacturers, who have little to fear from American competition.

There are good markets for American candy, too, in the adjacent countries, Scotland, Wales, and Ireland. Scotland, in particular, is a heavy buyer, not only of confectionery, but of chocolate also. In fact, it is one of the best markets we have for this commodity, the figures for 1923 being 149,260 lbs. The Scotch favour coconut goods, marshmallow, and mint candies, while the Welsh are partial to hard gums and mints.

In Ireland there is a pronounced sentiment in favour of American products, and the manufacturer who takes the market seriously should enjoy a virtual monopoly in a short time. The local trade, never very flourishing, has recently passed into English hands. In 1923, 153,325 lbs. of American confectionery, and 25,778 lbs. of chewing gum were imported. This trade was handled by English agents, against whom there is deep-rooted prejudice. In Ireland, as in Norway, the city is for direct imports. The Department of Commerce recommends the establishment of warehouses by American manufacturers, but this writer, who has intimate personal knowledge of the market, believes that equally good results could be obtained by making satisfactory arrangements with local distributors. The four

principal seaports, Cobh (formerly Queenstown), Dublin, Belfast, and Londonderry (Moville), are admirably served by English, German, or American steamship lines.

Holland

These four countries provide the greatest outlet for our overseas trade in confectionery; but on the mainland of Europe there are markets, too, which it will pay us to consider. Of these, Holland is the chief, with 93,938 lbs. of confectionery and 61,394 lbs. of chewing gum. There is no market here for chocolate, as the native product, in the manufacture of which approximately 10,000 persons are engaged, is perhaps the best that can be obtained anywhere. It is a confectionery market pure and simple, and one, too, that is capable of considerable expansion if properly handled. The innate conservatism of the people renders them slow to change either their habits or their tastes. But a sustained advertising campaign would accomplish highly beneficial results. The confectionery most in demand is hard candy, with caramels, gum drops and toffees following in the order named. No consular invoices are required any more than they are for shipments to the British Isles.

Denmark

Next in order of importance is Denmark, with 55,037 lbs. of confectionery and 207,459 lbs. of chewing gum. It is estimated that Denmark has nearly 400 candy factories and 14 chocolate factories. Many of the former, however, are very small, employing at most ten or twelve people, but the quality of the products is high, as it has need to be, for the Danes are highly critical in their candy requirements. Good candy, which can be retailed at popular prices, however, will sell here, as will also specialities. The market for chewing gum is growing by leaps and bounds. No consular invoices are required.

Norway

Norway takes about half the quantity of confectionery from the United States that Denmark does, but the demand for chewing gum is very slight. In 1923 she imported only about 4,000 lbs. This is another market to which American manufacturers have never given serious attention, with the result that Norway, which once imported her confectionery in considerable quantities, now exports her own to some of those countries which formerly supplied her. American confectionery is too sweet for Norwegian taste. There is, however, a small market for confectionery of the cheaper grades. No consular invoices are required.

Sweden

In 1923 Sweden imported from the United States 29,683 lbs. of confectionery and 49,682 lbs. of chewing gum. There is a growing popular demand for candy, but the local industry, which is well organised and in a flourishing condition, is expanding to keep pace with this demand. Sweden is one of the few European countries in which retail candy stores are to be found. Caramels and marzipan are the candies principally in demand. The consumption of chewing gum is on the increase.

France

France, which imports only 13,000 lbs. of American confectionery, acquired the chewing gum habit during the war, and is now our best European customer for that commodity. In 1923 she imported 347,975 lbs., and it is confidently predicted that when the figures for 1924 are published they will show a marked increase. It is doubtful if a market of any size could be developed here for either confectionery or chocolate of American origin.

In the remaining countries of Europe there is little likelihood of doing business on a scale that would prove very profitable, so far at least as chocolate and confectionery are concerned. The chewing gum habit, however, is gaining new adherents every day, and it would not be surprising if ultimately our export trade in this commodity, even with relatively small countries, assumed substantial proportions. Greece, however, used to be a fairly good customer of ours, but after the revolution high duties were imposed on certain imported luxuries, which included candy. While these remained in force business with that country was impossible, but now that they have been removed, orders are being placed which give promise of good business in the near future.

The Far East

Asia is a mystery even to the Asiatics. It is doubtful if it could be worked successfully from this country even with the aid of salesmen who have spent the best years of their lives drumming up trade among its different peoples. There is a small market in Aden among the European residents, but it is doubtful if it is worth cultivating. There is a considerable market in India among the American and European peoples. In China candy is served at every meal—it constitutes the first course, in fact—but the grinding poverty of the masses, the absence of anything resembling a stable currency, and the present internal disorders render it a very unsatisfactory market from the point of view of the confectionery trade. Taken by and large, Asia is a territory that belongs to the export houses, and it is doubtful if they will ever be able to make much of it.

The Philippines offer a very fine market for American confectionery. Shipments may be made either direct or through the medium of an export house. Australia is another good customer of ours, and the export houses which handle the trade are certainly to be complimented. South Africa, too, must not be forgotten, but as a market for confectionery it does not compare with Australia or the Philippines. Like Australia, it is sparsely populated, and where such is the case it is always better to entrust the business to a reliable export house.

South America

Continuing our journey westward, we finally reach South America, which offers some of the finest

markets in the world for confectionery just now. Not so many years ago these markets were almost entirely in the hands of English and German houses. The World War, however, altered the situation, and we are now firmly established in every market south of the Gulf.

The best South American markets for confectionery are Venezuela, Peru, Colombia, and Bolivia, in about the order named. Efforts now under way in other South American countries will, it is hoped, have a highly beneficial effect, and if this should prove to be the case the export possibilities of the Latin American market as a whole should be little short of extraordinary.

In South America the exporter will find himself up against the language barrier right from the start. Consular invoices there are as rigid and inflexible as it is possible for the wit of man to make them. Local sentiment has to be considered at every turn, and special packing is frequently requested. It may even be necessary to alter the names of certain items, notwithstanding the fact that the manufacturer has spent thousands of dollars to popularise them in the domestic market. Yet South America is a good market, and one that is rich in promise for the future. It is a common saying among those in the trade that know if goods sell in South America, they will sell anywhere. It is, perhaps, the finest market in the world in which to learn the export game.

In Venezuela quite fifty per cent. of the confectionery sold is of American origin. There is a steady demand for marshmallows, creams, and hard candy, but shipping conditions are poor, and some of the ports are highly congested. Great care must be exercised in packing, as climatic conditions are not favourable to the trade.

In Peru the demand for American candy is growing by leaps and bounds, but the exchange situation is against the local agents, and long term credits are necessary. Gum goods are popular in this market, and so also are marshmallows, hard candy, and creams.

Colombia favours hard candy, marshmallow goods, pan work and bon-bons. The local products are inferior in quality, and such competition as exists is offered by English, French, and Italian manufacturers. Colombians favour bright colours in their hard candy, and prefer a variety of flavours.

In Bolivia there is a promising market for chocolate goods, hard candy, and sugared almonds. There is only one small factory in the country, and this caters to the poorer inhabitants. Japan and Europe are bidding for the market, but so far they have met with scant success.

Central America and the islands of the Atlantic may conveniently be regarded as a single area for export purposes. Panama and Cuba between them purchase about a million pounds of candy annually, and could, of course, be dealt with direct from the factory. But it is doubtful if it would pay the exporter to handle the remainder of the territory in like fashion. And assuredly no reliable export house would take the islands alone. The better way would be to give the entire area to an established export house. This arrangement has been tried over a number of years by more than one leading concern, and it has worked to the entire satisfaction of all concerned.

Recipes

New Ice-Cream Bar Coating

THE FOLLOWING recipe for a new ice-cream bar coating is given by the American Dry Milk Institute. Use high quality (unsalted) butter. Soften by warming gently, stirring to a uniform creamy consistency. To each pound of butter used, add 1½ ozs. of pure vanilla extract during the creaming process.

The dry materials, which consist of 1 part cocoa powder, 2 parts dry skim milk, 3 parts powdered sugar, should be mixed separately to a uniform mixture free from lumps.

Stir the butter and dry material together, using 2¼ lbs. of butter to 2 lbs. of the dry mixture. Raise the temperature and stir gently, after mixing, to 103°-105°, when it is ready for dipping. Make only as used.

The quantity of moisture in the butter affects the body of the coating. Too little makes a brittle coating; too much a very soft one.

Candy notes that the above formula might be adapted to certain requirements of the confectionery manufacturer, by substituting coconut butter for the dairy product. A further modification suggested is the addition of powdered malt.

Toffee

Melt together 40 lbs. corn syrup, 4 lbs. salted dairy butter, 4 lbs. coconut butter, and 40 lbs. unskimmed sweetened condensed milk. When the batch has been fully melted and ingredients mixed, add 30 lbs. fine granulated sugar and mix this in well, then use 3 pints of water to wash down the sides of the kettle and blades of the mixers. Cook the batch as quickly as possible to a firm ball, then spread on a cooler to the thickness wanted. As soon as the batch is cold it should be cut and wrapped in waxed papers

Candy.

Fruit Nougat

The ingredients are prepared in two separate lots and then mixed after cooking.

Lot 1.		*Lot* 2.	
Sugar	1 lb.	Sugar	1¼ lbs.
Corn Syrup ...	½ lb.	Corn Syrup ...	¼ lb.
Water	⅓ pint	Water	¼ pint
Egg Whites ...	6		

In the case of Lot 1, cook the sugar, corn syrup, and water to 252° F. (hard ball). Beat the egg whites

and add the boiling hot syrup. Beat together until fairly stiff.

Cook Lot 2 to 280° F. (brittle crack), and add to Lot 1. Beat the two syrups together until light and stiff. Then add:

Butter or oleomargarine (melted)	...	3 ozs.
Chopped walnuts or almonds	...	½ pint
Chopped, dried, or candied fruit	...	¾ lb.

Beat until well mixed and light. Pour on oiled paper or slab to harden.

Fruit Products Laboratory.

Fruit Jelly Candies

In experiments conducted since 1920 it has been found that excellent candies of jelly-like consistency and full fruit flavour can be made from any tart juice or fruit pulp by the addition of fruit pectin and sugar and boiling to the jellying point. Fruits deficient in acid require the addition of fruit acid such as citric or tartaric.

To extract berry and grape juices, crush and boil the fruit in its own juice from 3 to 4 minutes and drain through a jelly bag. Slice apples and other firm fruits and add enough water to cover. Boil until soft. Drain through a jelly bag. Cut oranges in half and express the juice without heating. To juices lacking in acidity, add 1 pint of lemon juice or about half an ounce of citric acid to the gallon. Raspberry, peach, pear, and strawberry juices usually require this acidification.

Fruit Juice	2 qts.
Sugar	3 lbs.
Corn Syrup or Confectioner's Glucose	3 lbs.
Pectin Syrup	1 qt.

Mix the fruit juice and pectin syrup. Add the sugar and corn syrup. With a candy thermometer inserted, boil to 222°-223° F., or until a strong jelly test is obtained as indicated by sheeting of the liquid as it is allowed to drip from the spoon. Remove from the fire. Add a quarter cup of chopped nuts to each cup of the jelly after boiling is completed, if desired.

Pour into starch moulds or into oiled pans. The depths should be about half an inch. Allow to harden 24 hours. Remove the cast pieces from the moulds and brush off adhering starch. Cut sheets in pieces of suitable size. Dust with powdered sugar or dip in chocolate or fondant.

Fruit Products Laboratory.

Cherry Centres

The fondant may be made as follows: Cook together 85 lbs. of choice first-run granulated sugar, 15 lbs. of corn syrup, and 23 lbs. of water. Cook the batch quickly to 242° F., washing down the sides of the kettle to make sure that no undissolved grains of sugar are left in the batch. When the cooking is finished, run the syrup into a clean cooler, and cool until most of the heat is out, then cream. After creaming let the batch set in the cream truck about an hour before using. When ready, cook a syrup batch, using the following formula: 25 lbs. of the same grade of sugar as used for the fondant, 5 lbs. of corn syrup, and ten pounds of water. Cook the batch to 240° F., and while cooking make sure that no undissolved grains of sugar are left in the batch. While the syrup batch is being cooked have 100 lbs. of the fondant put into the melting kettle, and when the syrup batch is ready pour it over the fondant, stirring all the time. After the two are mixed add 5 lbs. of Mazetta, and while this is being mixed in, heat the batch to 155° F. When sure that the batch is uniformly mixed add three ounces of invertase and a litoil of bitter almond and colour, if wanted.

Put the cherries on to sieves, having about four meshes to the inch, and let drain for one or more hours. One must use his own judgment as to how long the fruit drains, as this depends upon how thin a syrup is used on the cherries. A fairly thick syrup would not require as long a draining as would a thin syrup. In any case, one does not drain the cherries any more than necessary to get the centres out of the starch and coated before excessive softening is started. As we have already stated, a small portion of cream should be run into the bottoms of the moulds and the cherry then dropped in and the mounds filled with cream. The centres should be firm enough to be taken from the starch and coated in from one to three hours. If the centres are to be hand-coated and the work, for any reason, goes slowly, it is a good plan to run the centres through the coating machine and give them a very light coating to prevent loss of syrup from sweating. After this first coating is on, the centres can be re-coated by the hand dippers. This formula produces a very good medium-grade centre when factory conditions are fairly good.

Candy.

Dickens and Food

Dickens, though himself a small eater, has been called the apostle of good cheer, and it is a curious fact that his first really successful article bore the title "A Dinner at Poplar Walk." This he sent to the *Monthly Magazine* in 1833. He got no pay for it. However, it attracted the attention of the editor of the *Morning Chronicle*, and also brought an invitation from the *Evening Chronicle*, resulting in a salary of five guineas, and then ten guineas, a week—an unusual income for a young fellow of twenty-three. An interesting outcome of his association with the *Evening Chronicle* was his marriage to the daughter of Hogarth, the editor.

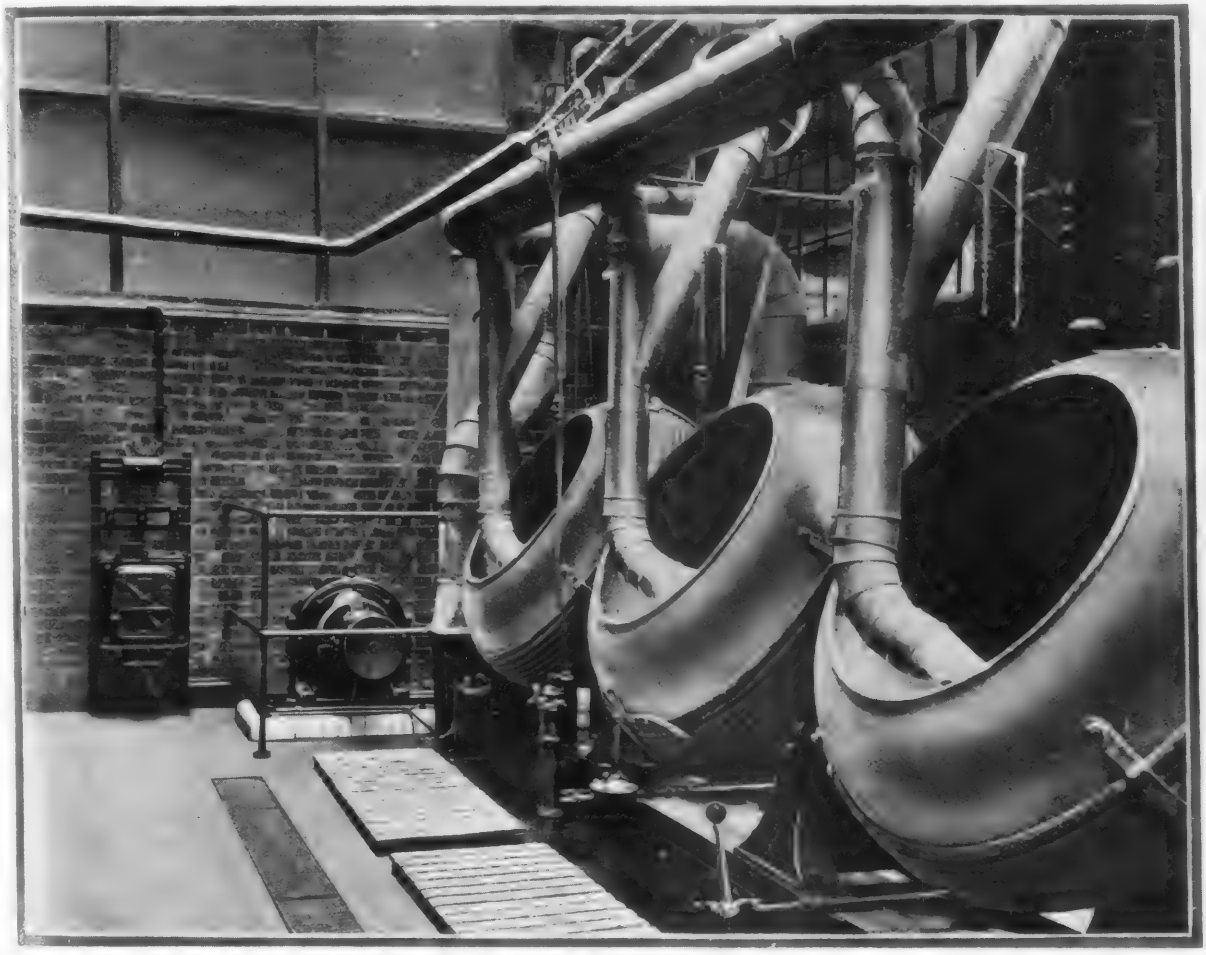
The contrast between the early days of miserable poverty and the days of plenty which followed the appearance of the *Pickwick Papers* made a great impression upon Dickens. The greatest of all the many feasts held in his honour were, first, the great feast at Boston, when thirty-six toasts were drunk by his admirers, and Lytton occupied the chair; and second, the magnificent banquet given to him by Girard in Paris, at which ten thousand wax candles were lighted.

MacKenzie MacBride.

Scientific Control in the Sugar Confectionery Industry

By R. H. MORGAN, B.Sc., A.I.C.

The sugar confectionery industry is rapidly discarding the stultifying influences of rule-of-thumb methods, and is taking its place in the front ranks of technical progress. The article below reviews the part played by scientific methods in modern factories.



UNDOUBTEDLY ONE of the most popular of manufactured foodstuffs to-day is sugar confectionery. With their innumerable attractive forms and pleasing flavours, sweets, in large quantities, are consumed by young and old alike, and the boiled sugar industry has risen to one of national importance. This increase in popularity and the recognition by manufacturers of their responsibility to the public is clearly shown by the number of factories now in existence, built on modern and hygienic lines. This is in direct contrast to the methods of past centuries, when sweets were made in any old building, often in the back portions of dwelling houses, under most unhygienic conditions.

Scientific Control

This growth in popularity of confectionery has also been accompanied by the introduction of methods of scientific control over the industrial processes. The various manufacturing operations are now realised to be based on well-known scientific principles, and hence a scientific staff has become a necessity in all up-to-date concerns. Chemists—analytical, routine, and research—find active employment in this branch of foodstuffs, which though of ancient origin is still young from the scientific point of view.

Purity

In every factory engaged in the manufacture of foods, *the* important factor overshadowing all others is rigid conformity to the highest standards of purity. No detail, however small, which might in any way lower the purity standard of the finished products dare be neglected. A grave responsibility rests on manufacturers of foodstuffs generally—namely, the health of the consuming public.

In the sugar confectionery industry, a strict analytical control from the point of view of purity has to be exercised over all raw products entering the factory.

The basic raw materials, sugar and glucose syrup, require a careful examination to see that they are free from metallic impurities and that they conform with the new Food Regulations in respect of their sulphur dioxide content.

The remaining raw materials can be classified broadly under the headings of flavours and colours. Flavours include a variety of substances of widely differing chemical composition—*e.g.*, acids such as citric and tartaric, essential oils, essences natural and synthetic, butter, starchy products, etc. Colours comprise those of natural origin and the numerous derivatives of coal tar. The members of these two classes necessitate a comprehensive knowledge of analytical methods to ensure the maintenance of the highest possible standard of purity in each case.

Careful observation of the materials going through the factory processes and a strict analysis of the finished products enables a manufacturer to give the necessary guarantee of purity with each consignment sold.

Quality

Important as is the purity question, the work of the analytical staff does not stop at that. Another factor of paramount importance in these days of close competition is that of quality. Samples of the various raw materials must be examined for their value in this respect. Sophistication, when practised to-day, is carried out in a scientific manner, and this does not render detection any the easier. Analytical control of this nature is an invaluable aid to the buying department.

Other Tests

Not the least important part of the preliminary testing of raw materials is determination of the probable manner in which the substances will behave when taking part in the various reactions which form the works processes. Sugars must be examined for their boiling properties. In the case of flavours, it must be ascertained that they will not lose their characteristic taste during manufacturing operations, while the fastness of colours has to be tested when the colouring matters themselves are brought into contact with other substances, some of which may be of a reducing nature.

Instruments for Control

In the factory, supervision from the scientific point of view of the work done, investigations into the causes of any unexpected results, attempts to simplify works processes are essential points in scientific control. In these days when so many recording instruments are used in industrial operations, periodical tests are necessary to show that they are functioning correctly. To take an example, it is interesting to note how the old rule of thumb methods for determining the degree to which a sugar solution had been boiled have been replaced first by the use of hydrometers and now by thermometers, which, of course, is a control of a scientific nature. These instruments require frequent checking, as an error of, say, two degrees in the height to which sugar has been boiled may seriously affect the keeping properties of the finished goods.

The Packing Department

In the packing department much of interest claims the attention of the scientist. With a class of foodstuffs so susceptible to atmospheric effects as is sugar confectionery, it is necessary to find out the most suitable conditions for packing and to see that those conditions are maintained. In large factories a humidifying plant is often employed to produce the particular conditions which have been found to give the best results.

The methods of packing and the types of containers used must be carefully considered to ensure their contents reaching the public in the best possible condition. This is of particular importance in the case of goods for export, as climatic conditions abroad seriously affect badly packed sweets.

Research Work

Problems arising out of the works processes, investigations into the possible uses of new materials, experiments on the keeping properties of sweets, etc., give rise to extensive research work. As in any other industry, new methods, new processes, and new ideas must be continually examined if the manufacturing confectioner is to keep in the front rank of sweet producers.

Economical running of the factory is essential for successful business. It is impossible to mention the numerous ways by which scientific control can reduce the running costs in a confectionery works. Utilisation of waste material, treatment of the water used for boiling, softening of the water employed for steam raising, selection of efficient lubricants for machinery and motor delivery service, prevention of industrial fatigue in the employés—such details as these combine to produce the smooth and economic working which characterises all factories run on scientific lines.

Mr. Leonard Hill has been elected an Associate of the Institute of Incorporated Practitioners in Advertising.

A number of wholesale dairy produce firms in Sydney, Australia, are installing a machine for preparing butter in one pound prints.

Recent Advances in Cereal Chemistry

By D. W. KENT-JONES, Ph.D., F.I.C.,
Chief Chemist, Messrs. Woodlands, Ltd., Dover.

The following is taken from a thesis entitled "A Study of the Effect of Heat upon Wheat and Flour, especially in Relation to Strength," which was presented by the author to London University for a Ph.D. degree.

IT HAS been shown that heating, under certain conditions, the limits of which are well defined, can enhance markedly the baking properties of flour, whether such heating is done in the wheat or in the flour form. It has further been shown that gentle heating with moisture, as at present indulged in by millers in their conditioning process, has little or no effect on the strength of the flour, although it may assist the subsequent milling operations.

Explanation of Chart

The material tested was an ordinary commercial straight run flour of moderate baking strength, labelled "C." At similar moisture contents, flour, and the wheat from which it is made, require approximately the same amount of heat treatment. The times of heating in hours are plotted as the ordinates and the temperatures in degrees Fahrenheit, as the abscissæ. All the points were found by a series of carefully conducted baking tests made by a skilled test baker. The graph is coloured to make the results more obvious. It will be seen that at any one temperature the heating can be continued for some time, which is quite long with the lower temperatures and short with the higher ones, before any improvement in the baking strength becomes apparent. This is represented by the uncoloured area. For instance, flour of normal moisture content may be heated at 110° F. for at least 16-20 hours, or 120° F. for 9-10 hours, without any improvement of its strength being apparent. As the time is increased, a partial improvement is observed, and this region in the graph is coloured a light red. As the treatment is continued, a maximum improvement is obtained, which is shown as the narrow dark red area. On the continuation of the heat treatment, the flour gives a dough, which becomes tougher and tougher until it becomes "short" and snappy, resembling flour from Indian wheat. This is represented by the common cement of the blue area. Places well in the blue region represent over-treatment, resulting in the ruining of the flour for baking purposes if used alone. It was an interesting discovery that, although such flour was by itself useless, it could actually improve the baking strength of weak, untreated flour when added in suitable proportions. On the basis of these discoveries, several patents were granted, notably British Patents 228,829 and 228,830.

Conditioning

It is true that many millers consider modern day warm conditioning improves the strength of their flour. On the other hand, some of the largest English millers of good scientific repute consider that conditioning by the aid of modern warm conditioning machines has no advantage over the old cold damping method, when sufficient bin room for standing is available. When some millers think that the use of modern conditioning machinery is of great value in increasing the strength of the resultant flour, it is possible that by this means they get their wheat into a good milling condition, separate the endosperm well, and so obtain the flour freer from the detrimental branny materials than previously. In other words, they are now getting the real natural strength from their wheat, whereas previously the flour was always weakened by the subsequent poor milling operation. That is, they have not increased the strength of the wheat, but have now obtained from their wheat flour of true strength instead of flour of strength lower than it should have been. Modern warm conditioning may have many real advantages, but it seems very improbable that it actually increases the strength of the flour, as judged by the standards laid down in this paper. Before leaving the subject of warm conditioning, it should be mentioned that it may be possible under certain conditions to increase the gassing power of the flour —a very useful help with wheat deficient in diastatic value.

Overheated Flour

It has always been well known that wheat could be ruined if heated too strongly, the actual times and temperatures depending on the wheat, and more especially on its moisture content. What has not been realised is, that between the region in which no improvement occurs and the region in which the flour is ruined, there is a belt (shown as the red area in the graph) wherein the strength of the flour is greatly increased. Further, that any flour can be so heated as to come anywhere within these regions. Approaching the border line of the blue region in the graph (over-treatment and ruination of the flour), the flour becomes stronger and stronger. The gluten becomes tougher and tougher. As the gluten becomes too tough, it starts to show "shortness"—*i.e.*, a tendency to snap. These are characteristics of certain flours such as Indian, Persian, and some Western Australian. Such flours have great stability, which is often a very useful asset. These flours, therefore, are really too strong, although there is a tendency to class them as weak, and hence in the same category as English. This is wrong, as actually they are at the opposite end of the scale to the weak English flour. Again, it has not been previously realised that such over-treated and spoilt flour, although useless by itself, can be mixed in with

advantage with weaker flours, and can strengthen them. The addition to a weak flour of less than one per cent. of a very highly over-heated glutenous flour can effect a great improvement.

Action of Heat on Viscosity

Leaving for the present the subject of the action of the highly over-heated flour, the correct heating of the flour to obtain a marked strength presents certain interesting points. Such treatment always increases the viscosity, and from this it is assumed that it increases the imbibitional power of the gluten. No experiments have so far revealed any perceptible alteration in the starch. It may be noted here that some early experiments a few years ago showed there was little difference between the viscosity of washed-out starch from weak and strong flours. All viscosities taken were relative to water. They were taken in Ostwald viscometers, and these instruments have been found to be satisfactory for this work, provided the diameter of the bore of the capillary is kept constant and comparatively large. Large deviations in these respects have been shown to invalidate completely the results.

Heating, therefore, appears to increase slightly the swelling properties of the gluten, and hence helps the binding power of the flour. Nevertheless, such treatment does not affect the "a" and "b" quality factors of Sharp and Gortner, when relative viscosities are used as in this paper. Further, such procedure is unable to distinguish between strong and weak flours, similar "a" and "b" factors being obtained.

Strength

In speaking of strength, it must be remembered that in this paper we are not so much concerned with the size of the loaf, but with the firmness and spring of the dough and the power of the flour to carry a proportion of weaker flour. This aspect of strength excludes the diastatic point of view, as this is a matter easily rectified by the baker, and is concerned with the quantity of, and more particularly the quality of, the gluten. Oven spring—*i.e.*, the power of the loaves to increase in size soon after being placed in the oven—is an important factor in the production of large volumes in loaves. Oven spring is determined by the condition of the gluten, as has been already shown, by the diastatic power, by the ripeness of the dough, by the skill in moulding, and, according to Dunlap (1926), by the initial PH of the flour.

Flour Proteins

It is desirable to get a mental picture of what happens in such a complex body as a dough, and Swanson (1925) has suggested a conception which is probably fairly accurate. The main distinguishing characteristic of flour is the gluten—*i.e.*, the flour proteins. These flour proteins are dispersed throughout the flour, and have a peculiarly strong affinity for water. The main proteins, gliadin and glutenin, may or may not exist as separate entities in flour. What is of importance is that as soon as water is added, the swollen protein colloids attract one another and form larger aggregates. Obviously, the strength of this combination will depend on two main factors. Firstly, the actual amount of these protein colloidal aggregates present; and secondly, their power of swelling and so joining up with the neighbouring aggregates. Thus, when excessive water is present, no gluten can be formed, as there is no contact between the hydrated gluten particles. If water is removed, as by centrifugal action, gluten formation, as generally understood, takes place. Thus, in a dough, the swollen colloidal protein particles join up and form a "mesh network," which holds enclosed in it the starch grains. Obviously, the more starch, the less strength there is in the dough. As the starch is removed by kneading, these colloidal particles of protein knit closer and closer together until there only remains the rubbery tough mass known as gluten.

Swelling Power of Proteins

The amount of protein, and hence the amount of gluten in a flour, cannot very well be altered, but what can be altered is the swelling power of the proteins. As fermentation of the dough proceeds, a number of factors tending to cause disintegration come into operation. Some chemists hold that the traces of acids formed have a disintegrating and softening action on the dough. Yeast certainly exercises a strong proteolytic action. This proteolysis alters the colloid condition of the proteins. It markedly lessens their swelling power. While some proteolysis is necessary in a dough, in order that the gas generated can easily distend the dough, this must not reach the stage where the dough loses more gas than it produces. It is usually necessary to ensure that the dough does not break down too much. The last thing the baker wants is a dough which flows out too much at the end of fermentation, while he does not want the fermented dough to be too stiff; this rarely occurs. If so, the baker would normally deal with the situation by making his original dough slacker, thereby increasing the yield of bread.

Increasing the Strength

From this point of view, therefore, the main characteristic of strength is the imbibitional power of the proteins—that is, the swelling and binding power. Just as dispersion caused by proteolysis reduces the swelling power, so does an alteration of the degree of colloidal dispersion in the other direction—that is, the tendency to coagulation—increase the swelling and binding power. It seems probable, therefore that a form of treatment which increases coagulation or flocculation, increases strength, although it is obvious that a limit exists. Hence it is necessary that such treatment should be well under control. The term "coagulation" may be objected to on the ground that such a term implies an irreversible alteration of a hydrophilic sol into a suspensoid gel. The phrase—an increased degree of aggregation—may therefore be more acceptable to some chemists.

(*To be continued.*)

A Promising Speciality: Prune Ice-Cream

By W. V. CRUESS AND G. D. TURNBOW,
University of California.

THIS IS the day of specialities in ice-cream as in many other products. The American public of to-day apparently demands new thrills in its amusements and new foods on its table. Ice-cream is no exception to the rule, and new ideas applied in this industry are both numerous and varied.

Often the novelty in food becomes the staple. For example, chocolate dipped ice-cream bars, such as the Eskimo pie, have come to stay it seems. Ready-to-serve breakfast cereals have replaced to a large extent the one time universal oatmeal mush at the national breakfast-table. Florida and California grapefruit at this same meal now give bacon, ham, and eggs a real run for their money.

In our investigations on the use of fruit in ice-cream, we have thoroughly tested the suitability of prunes as the basis of an ice-cream speciality. For various reasons, we believe that this product has real commercial possibilities. First of all, prune ice-cream is an excellent cream, as the appearance is rich and attractive, the aroma and flavour distinctive yet very pleasing, and the texture is unusually good, probably because the gelatinous substances of the prunes promote smoothness. The cost of the fruit is very low, not to exceed three cents per gallon of the frozen cream. The preparation of the fruit for use in the cream is simple and inexpensive.

While several methods of preparing and using the prunes in ice-cream can be used, we have found the following most satisfactory in our experiments:

(a) *Cooking and preparing the prunes.*—Use ordinary California prunes, such as the "French" or "sugar" varieties. There are less acid than the Italian prune of the Pacific North-West, and therefore blend better with the dairy products. Small prunes such as 70/80's or 80/90's are perfectly satisfactory, and cheaper than the larger sizes.

To each pound of prunes add about two pints, or a little less, of water. Let soak overnight. Stew slowly until soft—usually about ten minutes. Cool sufficiently to permit handling. Rub through a coarse screen or colander to remove the pits.

(b) *Freezing.*—Use ordinary vanilla ice-cream, mix in the freezer. When nearly frozen add one gallon to one and a half gallons of the prune pulp to each ten gallon batch (forty-five pounds of mix) of cream. Freeze to the usual point and place in the hardening room.

(c) *Serving.*—Prune ice-cream is best when not frozen too hard. The cream prepared as described is excellent for the general trade.

Prune Health Ice-cream

Many of us eat prunes because of their health value. They are a favourite for convalescents and children. Frequently, however, it is difficult to persuade such people who should eat prunes for health's sake to eat enough of them to be a benefit.

Everyone likes ice-cream, and particularly prune ice-cream. Ice-cream is not only a dessert, but a very fine and well-balanced food. We have in prune ice-cream, therefore, a combination that is hard to beat: the high food value of the ice-cream plus the health appeal of prunes. It should prove a favourite in sanatoria, at school lunch counters, and in hotels and restaurants, either as a "night-cap" or as a breakfast dish.

In preparing prune ice-cream for this use, proceed as directed for ordinary prune ice-cream, *except double the quantity of prune pulp* to two gallons per 45 pound mix, and *serve as fresh as possible*, because on long standing in the hardening room it tends to become a bit rough in texture.

Use of Canned Prunes

Canned, ready-to-serve prunes are on the market in No. 10 cans. These need not be cooked. Open the can, rub fruit through a coarse screen or colander, mix with the syrup from the can, and add the entire mixture (contents of one No. 10 can) to a 45 pound mix of vanilla cream.

Publications Received

The Arkady Review.—The September issue of this useful publication, which is doing good work amongst the baking fraternity, is an "Exhibition Number." It contains several interesting articles, and includes a booklet entitled "What To Do and What Not To Do" ("Reprinted by courtesy of the *Journeyman Bakers' Magazine*, and presented with compliments to bakers in the hope that they will reap benefit from the excellent advice contained therein"). This booklet should be carefully read by every baker. It contains "Dough Temperatures and how to get them Right," "Thermometers: how they are Made and how to Look after them," "Specific Heat," "A Word about Ovens."—*The British Arkady Co., Ltd., Manchester.*

Leaflets issued by J. G. Jackson and Co., Glasgow.—These describe the Jackson Grinders for spices, grains, coffee, etc.; Bacon Rolling Machines, and the Jackson Horizontal Filling and Measuring Machine for cereals, custard, and blanc-mange powders, meat and fish pastes, etc.

Programme of the First International Conference on Bread and Flour Manufacture

This Conference is to be held at Prague under the auspices of the Czecho-Slovakian Government on September 22 to 25, 1927.

I. Opening of the Conference by the Chairman of the Preparatory Committee

Welcoming of Delegates and invited Guests.
Election of Honorary Presiding Board of the Conference.
Election of Members of Working Committees.

II. Reports on Working the Grain into Flour

1. Requirements of millers on grain quality.
2. Grain Storage and its effect on grain quality.
3. Improving of grain quality.
4. Effect of individual milling processes on the quantity of products.

III. Reports on Working Flour into Bread

1. Requirements of bakers on flour quality.
2. Effects of flour storage on its quality.
3. Flour improving by means of (*a*) physical methods; (*b*) chemical methods.
4. Effects of individual baking processes on the quality and quantity of bread and other baking products.

IV. Reports on the Consumption of Milling and Baking Products

1. Consumers' requirements on flour and bread quality.
2. Other different effects on the food value of flour and bread.
3. Effects of artificial flour improving on the food value of bread and on human health.

V. Reports on the Proposed Unification of the Cereal Research Workers

1. Unified control methods for:
   - (*a*) Raw Materials;
   - (*b*) Control of the milling processes;
   - (*c*) Control of the baking processes;
   - (*d*) Control of the finished products.
2. Research work.
3. Schools.
4. Establishing of an international organisation of cereal research workers; exchange of publications, collaboration of editors, arrangements for periodical international meetings, establishing of sections in all countries, etc.

VI. Termination of the Conference

Final speeches.
Working the resolutions of individual Committees.
Fixing the date and place of the next Conference.

VII. Special Lectures on the Best Utilization of Grain and Flour with Demonstrations of Apparatus, etc.

VIII. Excursions and Trips

Address: Praha I.—606, Staroměstské nám, 15, Prague.

Commercial and Legal News

(The Editor does not accept responsibility for any errors which may occur in the following notices.)

New Companies

The undermentioned particulars of New Companies recently registered are taken from the Daily Register compiled by Jordan and Sons, Ltd., Company Registration Agents, 116-118, Chancery Lane, London, W.C.2.

VIOROID, LIMITED. (223627) Registered August 4, 1927. To acquire an invention or process for improvements in the mnfre. of bread and other foodstuffs, and the trade mark "Vioroid." Nom. Cap.: £1,000 in £1 shs.
Dirs.: E. Harding, "Packwood Grange," Dorridge, Warwickshire.
S. Bonsor, 173, Church Hill Road, Handsworth, Birmingham.
J. H. Merrett, 244, City Road, Cardiff.
Remun. of dirs., as voted by the company.

GRAY KNIGHT & COMPANY, LIMITED. (223265) Regd. July 18, 1927. 151, High Street, Stratford, E.15. To take over the bus. cd. on at Stratford, as "A. E. Knight," and to carry on the bus. of mnfrs. of and agents for confectionery, sweetstuffs, etc. Nom. cap.: £1,000 in £1 shs.
Permt. dirs.: A. G. Gray, 19, Silversea Drive, Westcliff-on-Sea.
A. E. Knight, 15, Buckingham Road, South Woodford, Essex.
Qual. of dirs., £50.

WEAVER AND SONS, LIMITED. (223209) Regd. July 14, 1927. To take over the bus. of a wholesale and retail mnfg. confectioner in all its branches cd. on at 18, Foxhall Rd., Blackpool, as "Weaver & Sons." Nom. Cap.: £600 in £1 shs.
Dirs.: Alfred Weaver, 18, Foxhall Road, Blackpool.
Arthur Weaver, 18, do.
Harry Weaver, 18, do.
Qual. of dirs., 100 shs. Remun. of dirs., as voted by the co.

EXCEL CONFECTIONERY COMPANY, LIMITED. (223132) Regd. July 9, 1927. To carry on the bus. indicated by the title. Nom. cap.: £5,000 in £1 shs.
Dirs.: E. Tait, 4, "The Dene," Monkseaton, Northumberland.
E. C. Rees, 47, Patterdale Terrace, Gateshead.
A. A. MacDonald, address not stated.
Qual. of dirs., £200. Remun. of dirs., £50 each per annum.

L. DEXTER & SONS, LIMITED. (223150) Regd. July 11, 1927. 7, Queen Street, E.C.4. To carry on the bus. of bakers, confectioners, provision dlrs., and café proprs., etc. Nom. cap.: £5,000 in 10/- shs.
Dirs.: L. Dexter, 79, Kingston Road, Staines, Mdx.
L. W. Dexter, Sunnyfield, Parkham Grove, Ashford, Mdx.
H. E. Dexter, 79, Kingston Road, Staines.
Qual. of dirs., 100 shs. Remun. of dirs., as voted by the co.

SHACKLETON, CLARKE & COMPANY, LIMITED. (223126) Regd. July 9, 1927. To take over the bus. of bakers and confectioners cd. on at 66 and 20, Bingley Road, and 103, Kirkgate, Shipley, Yks., as "J. W. Shackleton." Nom. cap.: £2,000 in £1 shs.
Permt. dirs.: J. W. Shackleton, 103, Kirkgate, Shipley.
H. Clarke, 7, Grove Terrace, Frizinghall, Bradford.

PROGRESS ROCK AND CONFECTIONERY COMPANY, LIMITED. (223514) Regd. July 28, 1927. To carry on the bus. indicated by the title. Nom. cap.: £3,000 in £1 shs.
Dirs.: W. R. Brown, 15a, Brooklyn Avenue, Blackpool.
F. Hopkinson, 154, Church Street, Blackpool.
L. Saxon, senr., "Glenlyn," 5, Shaftesbury Ave., Blackpool.
L. Saxon, jnr., 170, Warbeck Road, Blackpool.
Qual. of dirs., £50 shs.

JOHN T. MICHELL, LIMITED. (223469) Registered July 27, 1927. 11, Flodden Road, Camberwell, S.E.5. To carry on the bus. of mnfg. and genl. confectioners, etc. Nom. cap.: £2,000 in £1 shs.
Dir.: J. T. Michell, 11, Flodden Road, Camberwell, S.E.5.
Qual. of above dir., the holding of 50 shs.; of other dirs., 20 shs. Remun. of above dir., £260 per annum; of other dirs., as voted by the co.

WINDSOR'S MARZIPAN DE LUXE, LIMITED. (223440) Regd. July 25, 1927. To take over the bus. now cd. on as "Windsor's Marzipan de Luxe," and to carry on the bus. of mnfg. confectioners, etc. Nom. cap.: £1,000 in 1/- shs.
Permt. dirs.: G. W. Kettle, address not stated (ch.).
J. W. Richards, do. (mang. dir.).
Subs.: J. H. Pinckney, 4, Gorleston Road, South Tottenham, N. (solr's. clerk).
H. Elwell, 65, Coleman Street, E.C.2 (solr.).

B. POOLEY & SONS, LIMITED. (223414) Regd. July 25, 1927. To take over the bus. of a baker and confectioner now cd. on at Plymouth as "B. Pooley." Nom. cap.: £10,000 in £1 shs. (4,000 preference and 6,000 ord.).
Permt. dirs.: B. Pooley, 31, Regent Street, Plymouth (permt. gov. dir. and chairman).
G. Pooley, 1, Anson Place, Plymouth.
N. Pooley, address not stated.
Qual. of permt. gov. dir. and ch., £500 shs.; of dirs., £100 shs.

CORNUBIA, LIMITED. (223725) Registered August 11, 1927. To carry on the bus. of biscuit mnfrs., bakers, etc. Nom. cap.: £12,000 in £1 shs.

Dirs.: To be appointed by the subs.

Qual. of dirs., one share. Remun. of dirs., as voted by the company.

Subs.: E. A. Lawrence, 101, The Avenue, Muswell Hill, N. (clk.).
P. F. Evans, B.A. (Cantab.), 3, College Fields, Clifton, Bristol.

DOVER'S PURE MINERAL WATER COMPANY, LIMITED. (223726) Regd. August 11, 1927. Terrace Road, Walton-on-Thames, Surrey. To take over the bus. of mnfrs. of and of dlrs. in mineral waters, cordials, essences, and beverages, etc., cd. on at Walton-on-Thames by W. J. Dover and F. A. Morris. Nom. cap.: £3,000 in £1 shs. (2,300 preference and 700 ord.).

Permt. dirs.: W. J. Dover, Hambro Stores, Dawley Road, Hayes, Mdx.
F. A. Morris, Terrace Road, Walton-on-Thames.

Qual. of dirs., one ord. share. Remun. of dirs., £16 10s. each per calendar month.

COUNTY A1. CHEESE CREAM SANDWICH COMPANY, LIMITED. (223689) Regd. August 9, 1927. 102, King's Road, Reading, Berks. To carry on the bus. indicated by the title. Nom. cap.: £2,000 in £1 shs. (500 preference and 1,500 ord.).

Permt. joint mang. dirs.: F. Kent, 9, Lynmouth Road, Reading.
T. E. Field, 250, London Road, Mitcham.

Qual. of above dirs., £100 shs.; of other dirs., £100 shs. Remun. of dirs., as voted by the company.

DAIRY PRODUCTS, LIMITED. (223672) Regd. August 8, 1927. To carry on the bus. of ice-cream mnfrs., salt mchts., etc. Nom. cap.: £3,000 in £1 shs.

Permt. dirs.: A. E. Warren, 36, Southfield Square, Bradford.
C. B. Barrand, 10, Carlisle Road, Bradford.
C. Barnett, address not stated.

Qual. of dirs., £200 shs.

London Gazette Information

Joint Stock Company.

The name of the undermentioned company was struck off the Register on July 22nd, and is dissolved:

Combe Martin Jam and Preserve Co., Ltd.

Reduction of Capital.

ST. LOUIS BREWERIES, LTD, and Reduced. The Order of the High Court, Chancery Division, dated July 12th, 1927, confirming the reduction of the capital of this company from £1,260,000 to £990,000 and the Minute approved by the Court showing with respect to the Share Capital of the Company, as altered, the several particulars required by the Act, were registered by the Registrar of Companies on July 22nd, 1927.

Voluntary Liquidation, Appointment of Liquidator.

(Note.—Voluntary liquidations may, in some instances, refer to companies in course of reconstruction.)

STEYNE FOODS, LTD. Resolved, July 9th, 1927: "That owing to the death of the liquidator, Mr. Robt. Carpenter, Mr. F. W. Turner, of Midland Bank Chambers, North St., Brighton, be appointed liquidator."

Companies Acts, Winding up Order.

EKINS SON & PERCIVAL (1926) LTD., Sheep St., Wellingborough. Winding up Order dated July 19th. (No. of Matter 00289 of 1927.)

Ministry of Labour,
Whitehall, S.W. 1.

TRADE BOARDS ACTS, 1909 AND 1918.

NOTICE OF INTENTION GIVEN UNDER THE ABOVE-MENTIONED ACTS TO MAKE A SPECIAL ORDER TO BE CITED AS THE TRADE BOARDS (MILK DISTRIBUTIVE) ORDER, 1927.

The Minister of Labour hereby gives notice that, with a view to altering the description of the Milk Distributive Trade contained in the Appendix to the Trade Boards (Milk Distributive) Order, 1920, as varied by the Trade Boards (Milk Distributive) Order, 1926, he intends, pursuant to the powers conferred on him by Section 2 of the Trade Boards Act, 1918, to make a Special Order varying the above Orders in the manner shown in the Draft Special Order contained in the Appendix hereto.

Further copies of the Draft Special Order may be obtained on application in writing to the Secretary, Ministry of Labour, Whitehall, London, S.W.1

Objections to the draft Special Order must be sent so as to reach the Minister of Labour at the above address within 49 days from the second day of August, 1927, that is to say on or before the twentieth day of September, 1927. Every objection must be in writing and must state:

(*a*) the specific grounds of objection; and
(*b*) the omissions, additions or modifications asked for.

Given under the Official Seal of the Minister of Labour this thirtieth day of July in the year one thousand nine hundred and twenty-seven.

(L.S.) *T. W. Phillips,*
Deputy Secretary of the Ministry of Labour.

DRAFT SPECIAL ORDER.

Trade Boards.

THE TRADE BOARDS (MILK DISTRIBUTIVE) ORDER, 1927, SPECIAL ORDER DATED 1927, MADE BY THE MINISTER OF LABOUR UNDER SECTION 2 OF THE TRADE BOARDS ACT, 1918 (8 AND 9 GEO. 5. C. 32) VARYING THE TRADE BOARDS (MILK DISTRIBUTIVE) ORDERS, 1920 AND 1926.

Whereas the Minister of Labour (hereinafter referred to as the Minister) by a Special Order called the Trade Boards (Milk Distributive) Order, 1920, dated the 9th day of January, 1920, applied the Trade Boards Acts, 1909 and 1918, to the trade specified in the Appendix to the said Special Order;

And whereas the description of the Trade in the said Appendix was altered by the Trade Boards (Milk Distributive) Order, 1926;

And whereas it is provided by sub-section 1 of section 2 of the Trade Boards Act, 1918, that every Special Order may be varied or revoked by a subsequent Special Order;

And whereas the Minister is of opinion that it is desirable to vary the said Special Orders by altering the description of the trade therein specified;

Now, therefore, the Minister, by virtue of the powers conferred on him by the Trade Boards Acts, 1909 and 1918, and of any other powers enabling him in that behalf, hereby makes a Special Order varying the said Special Orders:

(1) The description of the trade set out in the Appendix to this Order shall be substituted for that set out in the Appendix to the Trade Boards (Milk Distributive) Order, 1920, as altered by the Trade Boards (Milk Distributive) Order, 1926.

(2) This Order may be cited as the Trade Boards (Milk Distributive) Order, 1927.

Given under the Official Seal of the Minister of Labour this day of in the year one thousand nine hundred and twenty-seven.

Secretary of the Ministry of Labour.

DRAFT DEFINITION OF THE MILK DISTRIBUTIVE TRADE.

1. Subject as hereinafter provided, the Milk Distributive Trade shall consist of the following operations:

(i) The wholesale and retail sale of milk;

(ii) the sale of other goods by workers mainly employed in the sale specified in paragraph 1 (i) hereof;

(iii) all work incidental to the sale specified in paragraph 1 (i) hereof.

2. Work incidental to the sale specified in paragraph 1 (i) hereof shall include, inter alia:

(*a*) Collecting, delivering, despatching;

(*b*) pasteurising, sterilising, homogenising, humanising, cooling, separating and all work performed in connection with any other processes in the preparation of milk;

(*c*) blending, testing and sampling of milk;

(*d*) cleaning of utensils, receptacles, vehicles, premises, plant, machinery;

(*e*) stoking, attending to boiler, plant or machinery, fire lighting, portering of coal or other fuel;

(*f*) horse keeping and harness cleaning;

(*g*) portering, lift or hoist-operating, time-keeping, storing, stock-keeping, warehousing;

(*h*) boxing, parcelling, labelling, weighing, measuring, checking, bottling, packing and unpacking;

(*i*) clerical work or canvassing carried on in conjunction with the work specified in paragraph 1 hereof.

3. Notwithstanding any of the foregoing provisions, the Milk Distributive Trade shall not include any of the following operations:

(*a*) The wholesale sale of milk (and operations incidental thereto) from an establishment at which milk products are manufactured and from which unseparated milk is not ordinarily sold as such;

(*b*) the wholesale sale of milk direct from the farm where the milk was produced and all operations incidental thereto;

(*c*) the following operations when performed at a farm where the only milk dealt with is that produced on the farm:—cooling, bottling, cleaning of the dairy premises and of utensils and receptacles used thereon;

(*d*) work done by a worker for an employer who employs that worker mainly in agriculture or in operations specified in paragraph 3 (*b*) or (*c*) when performed in the circumstances described therein;

(*e*) the sale of milk in restaurants, shops or similar premises by waiters or shop assistants who are not mainly engaged upon such sale;

(*f*) the transport of goods by common carriers;

(*g*) carting and operations incidental thereto where the business carried on consists exclusively of such operations;

(*h*) work done by or on behalf of the Post Office.

4. For the purpose of this Schedule the expression "milk" means milk other than dried or condensed milk.

MINISTRY OF HEALTH.

THE PUBLIC HEALTH (DRIED MILK) AMENDMENT REGULATIONS, 1927.

Notice is hereby given under the Rules Publication Act, 1893, that it is proposed by the Minister of Health, after the expiration of at least 40 days from this date, to make regulations for the amendment of the Public Health (Dried Milk) Regulations, 1923, as regards the labelling of tins or other receptacles containing dried milk.

Copies of the draft regulations may be purchased directly from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C. 2; York Street, Manchester; and 1, St. Andrew's Crescent, Cardiff, or through any bookseller.

SWEETS (MANUFACTURE) REGULATIONS, 1927.

The Commissioners of Customs and Excise hereby give notice that under powers conferred upon them by Section 6 of the Finance Act, 1927, they have made Regulations for securing and collecting the Excise duty on Sweets. The Regulations are published as Statutory Rules and Orders, 1927, N. 728, and require that every maker of sweets for sale shall keep certain accounts and render certain returns.

Copies of the Regulations may be obtained directly from H.M. Stationery Office at the following addresses: Adastral House, Kingsway, London, W.C. 2; 120, George Street, Edinburgh; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegal Square West, Belfast; or through any bookseller.

TRADE BOARDS ACTS, 1909 AND 1918.
PAPER BOX TRADE BOARD (GREAT BRITAIN).

PROPOSAL TO VARY MINIMUM RATES OF WAGES FOR FEMALE WORKERS.

In accordance with Regulations made under Section 18 of the Trade Boards Act, 1909, by the Minister of Labour and dated 21st April, 1927, the Paper Box Trade Board (Great Britain) HEREBY GIVE NOTICE that they PROPOSE TO VARY the General Minimum Time Rates and Overtime Rates for Female Workers.

Full particulars of the proposed variation of the Minimum Rates will be supplied on application being made to the Secretary of the Trade Board by or on behalf of persons engaged in the trade.

Under Section 3 (5) of the Trade Boards Act, 1918, the Trade Board will CONSIDER ANY OBJECTIONS to the above Proposal to Vary which may be lodged with them within two months from the 16th day of August, 1927. Such objections should be in writing and signed by the person making the same (adding his or her full name and address), and should be sent to the Secretary, Paper Box Trade Board (Great Britain), 1, Whitehall Gardens, London, S.W. 1. It is desirable that objections should state precisely, and so far as possible with reasons, what is objected to.

F. Popplewell,
Secretary.

15th August, 1927.

TRADE BOARDS ACTS, 1909 AND 1918.

FIXING OF MINIMUM RATES OF WAGES IN THE PAPER BOX TRADE IN GREAT BRITAIN.

The Paper Box Trade Board (Great Britain) have issued a Notice dated 15th August, 1927, setting out the Minimum Rates of Wages in respect of Male and Female Workers (including Female Home Workers) employed in those Branches of the Paper Box Trade newly brought within the scope of the Trade by the Trade Boards (Paper Box) Order, 1925, as fixed by them and confirmed by an Order of the Minister of Labour to take effect as from 22nd August, 1927.

Information with regard to the Minimum Rates of Wages operative in the trade under the Trade Boards Acts may be obtained on application to the Secretary, Paper Box Trade Board (Great Britain), 1, Whitehall Gardens, London, S.W. 1.

F. Popplewell,
Secretary.

15th August, 1927.

TRADE BOARDS ACTS, 1909 AND 1918.

VARYING AND FIXING OF MINIMUM RATES OF WAGES IN THE ROPE, TWINE AND NET TRADE.

The Rope, Twine and Net Trade Board (Great Britain) have issued a Notice dated 16th August, 1927, setting out Minimum Rates of Wages as varied or fixed by them and confirmed by Order of the Minister of Labour to take effect as from 22nd August, 1927, together with all Minimum Rates previously in operation which are unaffected by the present variation.

Information with regard to the Minimum Rates of Wages operative in the trade under the Trade Boards Acts, may be obtained on application to the Secretary, Rope, Twine and Net Trade Board (Great Britain, 1, Whitehall Gardens, London, S.W. 1.

F. Popplewell,
Secretary.

16th August, 1927.

(*Continued from page 122.*)

mark when the barometer is high (30·7 in.). By making allowance for this variation in the boiling point, what is actually happening in this case is that one batch has been boiled to 242·4° F., whereas the other has only been taken to 238·7° F.—a difference of 3·7° F., sufficient to cause a noticeable variation in fondant cream. The simplest way to counteract this difficulty in a factory is for each department to check its thermometer against the boiling point of water. This is a simple operation, and takes but a few minutes. Assuming that all sugar boilings are based on the normal 212° F. for boiling water, all that is required is to immerse the thermometer in briskly boiling water. If it registers below 212° F., subtract the amount below from the normal temperature to which batches are taken, and likewise if it registers above 212° F., add the amount above to the final normal temperature. This is a very sound procedure, for it helps to counteract any errors in the thermometer irrespective of variation due to barometric pressure. It is particularly helpful on the recording dial thermometer, for it gives a record of the boiling point on the particular day from which all the boilings can be checked. For control purposes there is a neat little instrument on the market called the "Hypsometer." It is essentially an aneroid barometer, but the dial is graduated not only in inches of mercury giving the barometric pressure, but also gives, in degrees Fahrenheit, the boiling point (of water) corresponding to the various pressures.

Conclusions

To summarise:

1. Accurate temperature measurement is essential for efficient production. For general work the ideal thermometer which couples ease of reading with most accurate results is the long stem dial type.

2. For sugar boiling for fondant creams, etc., and all cases where duration of boiling is an important factor, the dial recording thermometer offers the best advantages.

3. Remember that all thermometers are liable to fractional errors, and that barometric pressure has an influence on the boiling point.

Recent Patents relating to Food Manufacture and Preserving

The following abstracts are obtained from recently published copies of the "Illustrated Official Journal" (Patents) by permission of the Controller of H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

271,143. **Drying vegetables, etc.** G. SCOTT AND SON (LONDON), LTD., AND G. W. RILEY. February 16, 1926.

271,185. **Slicing fruits, etc.** W. T. Turner. December 3, 1926.

271,205. **Preserving and packing butter, lard, etc.** W. H. POND. March 20, 1926.

For case-hardening butter, lard, etc., and for providing a packing therefor a melted material of much higher melting-point is sprayed on to the surface of the butter, etc., so that, before hardening, each particle sinks into the surface, and an invisible coating is formed. The covering material may be coconut-oil or other fat having a melting-point of 110° F., and when it reaches the butter surface its temperature should be above the melting-point of the butter.

271,223. **Skinning fishes.** F. HECKEL. April 14, 1926.

270,770. **Yeast.** J. P. H. JANSEN. November 10, 1925.

In the propagation of yeast small quantities of phosphates—*e.g.*, sodium phosphate, or other salts capable of forming hexose compounds—are added to a dilute saccharine wort and large quantities of air or oxygen are supplied during the process.

270,842. **Bakers' ovens.** H. P. DEN BOER. February 26, 1926.

270,862. **Bakers' ovens.** T. AND T. VICARS, LTD., AND E. L. VICARS. March 17, 1926.

270,882. **Pasteurising milk.** A. G. ENOCK. May 19, 1926.

270,941. **Bakers' ovens.** J. H. N. PELKMAN. September 8, 1926.

270,995. **Moulding, confectionery, etc.** A. A. THORNTON. December 30, 1926.

271,028. **Sausage-making, etc., machines.** VISKING CORPORATION. November 11, 1926. (Not yet accepted.)

271,052. **Cooking and sterilising food.** ANCHOR CAP AND CLOSURE CORPORATION. April 11, 1927. (Not yet accepted.)

271,066. **Tempering chocolate.** NATIONAL EQUIPMENT CO. May 4, 1927. (Not yet accepted.)

Thermostats; coating bakers' and confectioners' goods.—Relates to a method of tempering large masses of chocolate or the like, which consists in alternately subjecting the confining walls of the mass of chocolate to temperatures well above and well below its freezing point according as the chocolate is below or above the predetermined temperature, and in keeping the chocolate scraped from the said walls during the application of the low temperature. The invention is more particularly used to temper a moving stream of chocolate, a thermostat, positioned at the exit of a jacketed conduit, controlling the admission of heating and cooling fluids to the jackets.

271,067. **Moulding confectionery.** W. LOEBEN. May 6, 1927. (Not yet accepted.)

Relates to a process for producing sectional chocolate bodies, and consists in inserting in a mould having the general shape of the assembled article to be produced, a number of partitions of a material which will not unite with the hardened chocolate.

271,120. **Nutrients for external application to the body.** K. STEJSKAL. May 17, 1927. (Not yet accepted.)

A nutrient medium to be absorbed into the body through the skin consists of fat or oil in the form of an emulsion, preferably containing also other foods such as carbohydrates and albuminous substances. The emulsion is made with a water-binding substance such as glycerine. Ingredients specified are hog's fat, butter, olive oil, glycerine, glycols and their derivatives, sugar, dextrose, egg yolk, albumen, yeast autolysates, amino-acids such as glycocoll, and vitamins.

271,626. **Treating fruit, vegetables, etc.** A. J. H. HADDAN. May 1, 1926.

Fresh fruit, vegetables, and like food materials are preserved without destroying their vitamin content by drying, slicing, then chopping to break up the tougher fibres, and grinding to reduce the fibres, seeds, etc., to minute form and to produce a compact mass in which the oils, fats, cellulose, mineral salts, starches, etc., are evenly distributed. This mass is then ground more finely to break up the cells further, and is pressed into the desired shape. The grinding is stated to release a natural preservative which, when the pressed mass is exposed to air for a short time, causes the formation thereon of a film which, with the density of the mass, prevents the entry of air or insects and allows the product to be kept indefinitely. The preliminary drying is carried out at not above about 180° F., and until the moisture content is below 25 per cent. The process is said to be applicable to the preservation of dried fruit such as apricots, prunes, peaches, pears, and apples.

271,672. **Cleaning and greasing baking-pans.** R. MORTON. July 10, 1926.

271,777. **Yeast.** HANSENA, AKT.-GES., AND L. NATHAN. April 26, 1926.

Current Literature

Fruit and Vegetables

Raspberry Juice and Syrup. E. Jacobsen. (*Kons. Zeit.*, 32, 4.)

The Preparation of Canned Beans. (*Kons. Zeit.*, 29, 4.)

Investigations on the Canning of Muscat Rasins II. W. V. Cruess and J. W. Parcell. (*Fruit Prods. Jour.*, July, 1927, 15.)

Studies on the Preservation of Fruits in Sulphurous Acid Solutions. W. V. Cruess and A. H. El Nouty. (*Fruit Prods. Jour.*, July, 1927, 18.)

Automatic Temperature Control. H. H. Harting. (*Canning Age*, July, 1927, 639.)

Gelatinisation of Fruit Pectins. H. Lüers and K. Lochmüller. (*Kolloid-Zeit.*, 1927, 154.)

Bread and Confectionery

The Japanese Caramel Industry. (*Kazett*, 1927, 20, 694.)

The German Chocolate Industry. (*Kazett*, 1927, 19, 658.)

Nuts Used in Candy. H. Moses. (*Candy*, July, 1927, 64.)

Honey in Candy. (*Candy*, August, 1927, 66.)

Hard Cándy from the Chemists' Viewpoint. A. P. Bryant. (*Mfg. Conf.*, January, 1927, 10.)

The Hard Candy Problem. H. Lebeson. (*Mfg. Conf.*, January, 1927, 14.)

The Candy Test for Sugars. J. A. Ambler. (*Mfg. Conf.*, January, 1927, 17.)

Uniformity of Colour and Flavour in Candy. N. W. Kempf. (*Mfg. Conf.*, January, 1927, 20.)

Satin Finish Hard Candy. P. H. Schueter. (*Mfg. Conf.*, January, 1927, 24.)

Some Colour Problems in the Manufacture of Confectionery. J. A. Ambler. (*Mfg. Conf.*, February, 1927, 35.)

Various Articles on Marshmallows. (*Mfg. Conf.*, March, 1927.)

Factors that Control Uniformity of Marshmallow. E. T. Erickson. (*Mfg. Conf.*, April, 1927, 44.)

Turbidiscope for Testing the Quality of Sugars. K. L. Dern. (*Mfg. Conf.*, April, 1927, 46.)

Cereals and Rickets. A. Black, H. Steenbock, and B. H. Thomas. (*Ind. and Eng. Chem.*, August, 1927, 906.)

Various

Aluminium Cans for Preserving Foods. H. Serger. (*Chem.-Ztg.*, 1927, 51, 391, 411.)

Aluminium and the Preserving Industry. (*Kons. Zeit.*, 32, 5.)

The Use of Autoclaves. H. Ohler. (*Kons. Zeit.*, 29, 1.)

Cod-Liver Oil as Food. V. E. Nelson, R. L. Jones, G. Adams, and L. T. Anderegg. (*Ind. Eng. Chem.*, July, 1927, 840.)

Bacterial Spoilage in Mayonnaise, Relishes, and Spreads. D. M. Gray. (*Canning Age*, July, 1927, 643.)

Pumps for Canning Factories. L. V. Burton. (*Canning Age*, July, 1927, 621.)

Starch Drying and Sanitation. C. P. McCord. (*Mfg. Conf.*, July, 1927, 34.)

On Proteins, IV. S. Goldschmidt, F. Nagel, and K. Martin. (*Annalen*, July 7, 1.)

Studies on the Growth of Yeast, IV. G. L. Peskett. (*Biochem Jour.*, 3, 460.)

The Technology of Starch Manufacture. P. Nottin. (*Rev. Sci.*, June 25, 363.)

Investigations of Essential Oils. (*Bull. Imp. Inst.*, July, 107.)

Chemical Composition of Wheat. A. Schhukin. (*Naukh-Agron. Zhurnal*, 1926, 379.)

Analysis

Preparation and Analysis of the Various Proteins of Wheat Flour. W. F. Hoffman and R. A. Gortner. (*Cereal Chem.*, 1927, 4, 221.)

Concentration of Glutenin and other Proteins in Various Types of Wheat Flour. E. Grewe and C. H. Bailey. (*Cereal Chem.*, 1927, 4, 230.)

Determination of Casein in Milk by Approximately Isoelectric Precipitation. H. C. Waterman. (*Jour. Assoc. Official Agr. Chem.*, 1927, 10, 259.)

Morres and Schützler's Method for the Determination of Fat in Milk. O Baumann. (*Pharm. Zentr.*, 1927, 68, 289.)

Determination of Nitrate—and Nitrite—nitrogen in Meat. O. Noetzel. (*Pharm. Zentr.*, 1927, 68, 321.)

Determination of Benzoic Acid in Minced Meat. E. Waltzinger. (*Chem.-Ztg.*, 1927, 51, 170.)

Analysis of Fruit and Fruit Products. P. C. Gowen. (*Jour. Assoc. Official Agr. Chem.*, 9, 367.)

Miscibility Tests in the Detection of Adulterated Butter. H. J. Atkinson. (*Can. Chem. Met.*, 10, 181.)

Report on the Determination of Zinc and Copper in Gelatine. E. H. Berry. (*Jour. Assoc. Official Agr. Chem.*, 9, 458.)

Report on the Analysis of Flavours. J. W. Sale. (*Jour. Assoc. Official Agr. Chem.*, 9, 446.)

Detection of Neutralised Cream. R. Strohecker. (*Zeit. Unters. Lebensm.*, 1927, 221.)

Volatile Materials of Food. J. König and W. Schreiber. (*Biochem. Zeit.*, 1927, 105.)

Mucous Content of Cacao Husks. C. Griebel and A. Miermeister. (*Zeit. Unters. Lebensm.*, 1927, 227.)

Determination of Cacao Husk. J. Grossfeld. (*Zeit. Unters. Lebensm.*, 1927, 233.)

Ammonia Content of Cold-Storage Eggs. H. C. Lythgoe. (*Ind. and Eng. Chem.*, August, 1927, 922.)

CONFECTIONERS', BAKERS' AND ALLIED TRADES' 31st INTERNATIONAL EXHIBITION

ON SATURDAY, September 3, the 31st Bakers' and Confectioners' Exhibition opened on a bright and optimistic note. The wonderfully attractive display of everything that appertains to the ancient art and modern science of bread and confectionery making, and the busy, cheerful atmosphere created by the crowds of eager visitors, leave no room for doubt that on this occasion the Exhibition will prove to be even more successful than any of its predecessors.

Here one finds the latest developments in all classes of machinery for bread and confectionery making. There is a wide selection of bakers' ovens in the Main Hall, which demonstrate the rapid advances that have been made in this field. We notice, in particular, the large and improving stands of Messrs. Baker Perkins, Barrons, Hobarts, and Read's Mixers and Oven Co. In the Main Gallery visitors will find a great deal of interest in the sugar plant operated by J. Harrison Carter, Ltd. We would also call special attention to the various ingenious machines for producing show-cards and for wrapping bread and confectionery.

In addition to this comprehensive display of heavy machinery, there is an almost endless variety of smaller equipment for the factory and shop: weighing machines of every type, cash registers, display cards, bottles, containers of every conceivable kind, chocolate boxes, wrapping-paper, metal foil, and so on.

The display of bread, cakes, chocolate and sweets is beyond any possibility of detailed description. Along two sides of the Gallery is to be found an exhibition of confectionery submitted for competition. The pieces are sectioned and arranged so as to form a highly instructive display of British craftsmanship, which should be seen by everyone connected with the trade. At one end of the Gallery we notice excellent examples of the work of Wm. Jackson and Son, Ltd.

Gilbey Hall is a positive Wonderland of toffee and sweets, and will certainly prove to be one of the most popular places in the Exhibition. The stand occupied by Messrs. Pascalls, in King Edward's Hall, off the main entrance, does great credit to this well-known and long-established firm.

Finally, it is gratifying to note the appreciative comments made with reference to the stand occupied by Messrs. Leonard Hill, Ltd., the proprietors of FOOD MANUFACTURE. The Directors and Editor, having extended a hearty welcome to all connected with the trade, are meeting many old friends and making many new acquaintances.

Below, we give briefly some particulars of the exhibits. This does not, of course, embrace all the firms by any means.

CONFECTIONERS' AND BAKERS' EXHIBITION—*Continued.*

Machinery and Plant

The Bristol Steam Oven Works, Ltd.—Two Decker Jones' Steampipe Ovens in brick and portable types. The "Jones-Junior" Steampipe Oven. Jones' Patent Electric "Ovenlite," which can be fitted to the outside of any type of oven. The "Ideal" Dough Machines. Also the "Human New Pan" and "Twin-Arm" Kneaders in motion.

Artofex Engineering Works, Ltd.—Large double-deck, steampipe oven and a portable steampipe oven, Artofex Mixing and Kneading Machines, Cake Machines, etc.

The United Yeast Co., Ltd.—Cake Mixers, Dough Kneaders, Pie Making Machines, Ice-Cream Freezers and accessories, Cake fillings and ornaments, Decorative novelties.

The Hobart Manufacturing Co., Ltd.—Electric Dough Mixers, Cake Mixers, General Purpose Machines, Food Cutters, Coffee Mills, Meat Choppers, Candy Machines, Crescent Dishwashers.

H. C. Slingsly.—Trucks, wheelbarrows, and ladders.

Baker Perkins, Ltd.—A new two-cylinder automatic Loaf-Making Plant, the removable pan type "Viennara" machine, a two-cylinder Dough Divider, and a hander-up of the "umbrella" type, a No. 1 "Baker-Sevigne" Bread Wrapper, of the continuous type and for any kind of paper; a semi-automatic Wrapper, a new Cake Mixing and Whisking Machine, a novel automatic continuous Sugar Cooker, which uses no steam, a new patent Chocolate Dipping Table that ensures even temperature and prevents crusting, a "Fantafilla" machine that places exact quantities of chocolate in plain, fancy, or egg moulds, a "Baby" Chocolate Kettle. Messrs. Baker Perkins, Ltd., are now sole agents for the British Isles of the Ward Electric Vehicle; two models will be shown.

J. Harrison Carter, Ltd.—A complete Sugar Plant producing icing sugar, pulverised and castor. The grinding machine is fed by an elevator, and the ground product is taken away by another elevator and delivered to a hexagon reel, where various grades are taken out. Mr. May is at the stand to answer all inquiries.

The Watford Engineering Works, Ltd.—The Leavalley "Multitemp" Patent Iceless Ice-Cream Plant. This plant has recently been improved in several ways. It is now fitted with two or more temperature controls. The compressor is fitted with oil separator and nickel chrome steel single-throw double-bearing crankshaft. Also Ice-Cream Cabinets and Household Cabinets.

W. F. Mason, Ltd.—An Improved Pattern Embrey Patent Scaling-off Machine, working in conjunction with an Embrey Patent Spindle Moulder with Shaper combined, and "Pilbro" Patent Dough Greasing Machine, which eliminates the greasing of tins. Also, a working model of the "Britannia" Dough Kneading and Mixing Machine, complete with Sifter and Tempering Tank. The front of a Two-Decker Drawplate Oven, Two-Decker Portable Oven, and a range of sundry fittings for the model bakery.

Read's Mixers and Oven Co., Ltd.—This firm is displaying an attractive selection of Mixers and Ovens.

Dumbrill Plant and Engineering Co.—The Super "Human" Dough Kneader, with a new patent roller mixing arm and other special features. Sponge and Cake Making Machinery in various sizes, without gear wheels; any speed can be obtained, while running, by a patent positive reduction chain arrangement. Also, the Dumbrill Roll and Bun Divider and Moulder, capable of handling 6,000 to 10,000 pieces an hour. Also Steampipe Ovens, Dough Brakes, Dough Rollers, Blenders, Elevators, Tempering Tanks, and other bakery equipment.

Wilsons' Soda Fountains (1921), *Ltd.*—A new Mobile Model Soda Fountain and the "Save-all" Ice-Cream Conservor.

Hansella, Ltd.—The "Hansella" Rotary Plastic Machine, with a round cooling chamber of new design for small factories. The "Hansella" Junior, for cushions, pralines, humbugs, and long bon-bons, with square ends on the continuous principle. The Balling Machine Automatic, Whisking and Kneading Machines, "Gordian" Pans, and Chocolate Moulds, a "Bindler" Triumph Covering Machine, and a new Moulding Machine are to be seen at the Hansella warehouse.

The Peerless Electrical Manufacturing Co., Ltd.—The P.M. 80 Mixer in three sizes, and the C. 21 Sausage and Mincing Machine. These were awarded Diploma for Gold Medal at Olympia in November last. A full range of mixing machines are shown.

The Forgrove Machinery Co., Ltd.—The Forgrove Patent Caramel Wrapping Machine for wrapping caramels at 140 to 160 per minute. The arrangement ensures the centring of the design on the top of each caramel. New developments include a heat-sealing gear for sticking the folds of the caramels as they are ejected, and a special paper trip gear by which the automatic feed of the paper only operates so long as there is a caramel in position to be wrapped, thus saving paper. The Forgrove Patent Assorted Chocolate Foiling Machine, foiling in tin or aluminium foil at 60 a minute, with new improvements. The Forgrove Foiling Machine for bars, fitted with patent registering gear for use with printed foil.

X.L. Showcard Machine Co., Ltd.—The X.L. Showcard Producing Machines for producing showcards and price tickets in any colour or design or size.

Sumerling and Co., Ltd.—Apparatus and Utensils for the Caterer—*e.g.*, cooking ranges, stock pots, fish frying apparatus, cookers, carving tables, automatic water boilers, tea measuring machines, coffee extractors, hot milk churns.

P.I.V. Chain Gears, Ltd.—Three Standard Type Totally Enclosed P.I.V. Gearboxes are shown in motion.

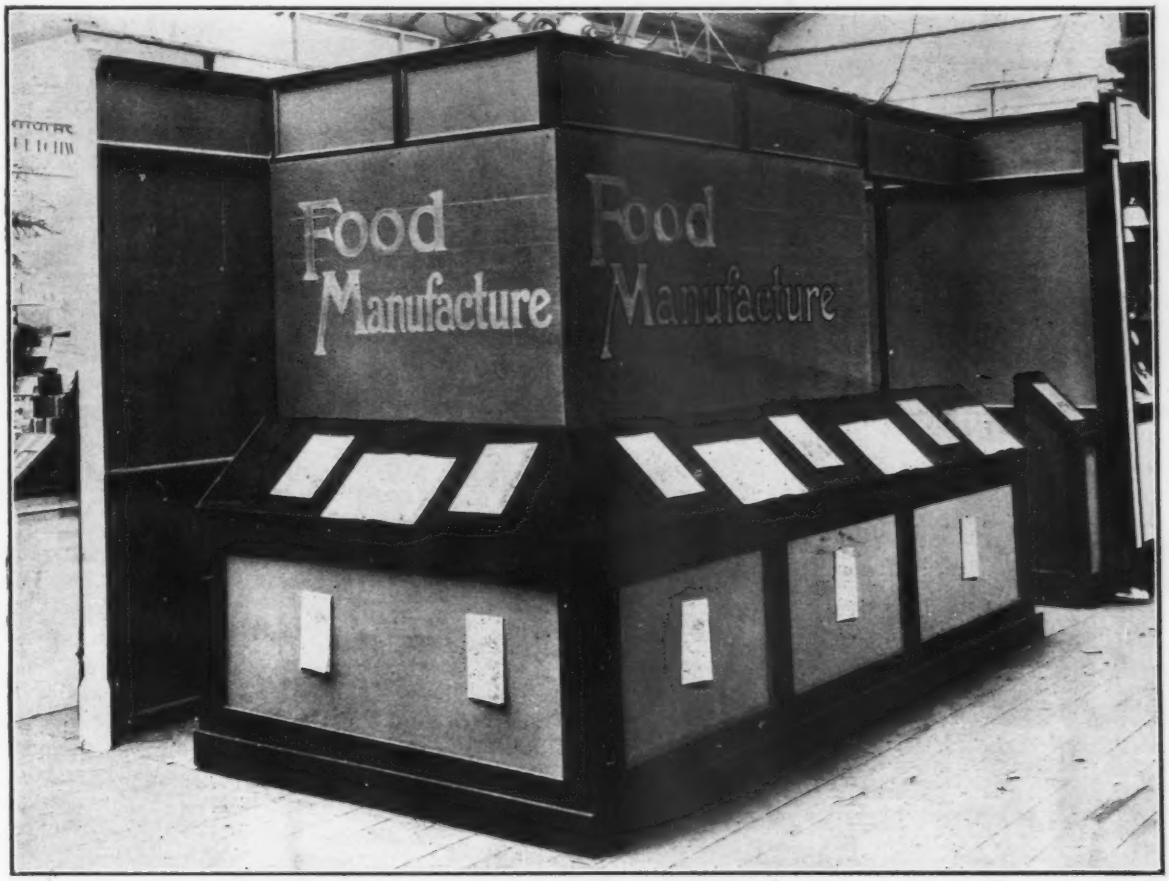
CONFECTIONERS' AND BAKERS' EXHIBITION—*Continued.*

Shop Equipment

W. and T. Avery, Ltd.—An attractive display of Weighing Machines for every purpose.

Automatic Scale Co., Ltd.—Automatic Scales and Bacon Slicers.

W. J. Bush and Co., Ltd.—This well-known firm is exhibiting a full range of Essential Oils, Fruit Essences, and Colours.



The imposing and attractive Stand occupied by FOOD MANUFACTURE.

The National Cash Register Co., Ltd.—An improved ticket-printing Cash Register.

Thomas O'Brian, Ltd.—Cash Checking Tills.

Essences and Colours

Stevenson and Howell, Ltd.—A representative display of well-established goods. The firm's representatives and Directors will be at the stand to welcome callers.

Blackwell, Hayes and Co., Ltd.—Essences and Colours. A special feature is the Cream Powder. This firm is making a special offer to all callers at the stall.

Cooke, Tweedale and Lindsay, Ltd.—Main specialities are Vanillot, Roseta, "True Fruit" Essences, Compound Essences, Ottos, and a range of Colours for Foodstuffs. Also a full range of Essential Oils for Foodstuffs.

Containers, Sample Cases, etc.

Venesta, Ltd.—The New Venesta Case enables the baker or confectioner to sell smalls from door-to-door. A barrow is shown fitted with a Case, and a cinema displays the Case in use.

Brookes and Sexton, Ltd.—Travellers' Sample Cases for carrying by hand and by motor-car, having a number of novel features.

Thomas Keane and Son, Ltd.—A large selection of Sample Cases are exhibited.

Sutax, Ltd.—Although not exhibiting here, this well-known firm will show a selection of Closure and Sealing Machines for bottles and jars and other specialities at the Grocers' Exhibition on September 17th.

CONFECTIONERS' AND BAKERS' EXHIBITION—*Continued.*

Cross and Co., Ltd.—Baking Cases, Bake Cups, Doyleys, Tablecloths, etc.

James Hunt, Ltd.—Pots for Ice-Cream, Cream, Fish Paste, etc. Paper Bags and Cardboard Boxes. Paper Merchants, Printers, etc.

Mappin and Webb, Ltd.—Plate and Cutlery for confectioners, restaurants, etc.

Wrapping Paper

Spicers, Ltd.—Bread Wrapping Papers for all automatic machines and sealers. Twisting Papers for all toffee wrapping machines, and kiss cutting and wrapping machines.

Waxed-Papers, Ltd.—Waxed Papers of every description, Patent Ventilating Stripe Bread Wrappers, Transparent Cake Wraps, Aluminium Foil, Wax-backed Foil, Patented Milk Bottle Cap with the flap, which prevents spilling on opening.

The Neasden Waxed Paper Co., Ltd.—Hygienic Waxed Wrappings for bakers, confectioners, etc. A speciality is made in coils for use on the Plastic type of wrapping machine. A wide range of samples on view.

Wilkinson Bros., Ltd.—Embossed Seals for wrappings, boxes, cases, etc.

Bread

Granose Foods, Ltd.—Granovita Gluten Bread for diabetes, obesity, and anæmia.

The Be-Ze-Be Honey Co., Ltd.—Be-Ze-Be Bread.

J. Reynolds and Co., Ltd.—Gold Medal Wheatmeal Bread.

Kaylene, Ltd.—The Kakrispa Rye Breads, "Spisbrod" and "Delikatess."

Flour

Stoate and Sons, Ltd.—"Vigol" Wheatmeal Flour and Farmhouse Flour.

H. W. Richards.—A new Patent Brown Flour, "Vit Be."

F. Prewett.—Stoneground Flour and Wholemeal.

Milk and Egg Products

The New Zealand Co-operative Dairy Co., Ltd.—Display of goods in which "Anchor" Milk Powder has been used. Also the new "Anchor" Emulsor for making milk and cream by reconstituting dried milk, unsalted butter, and water.

Milkal, Ltd.—"Milkook" Dried Milks. "Milkook" Ice-Cream Powder, when mixed with hot water, is ready for the freezer.

Horlick's Malted Milk Co., Ltd.—Horlick's Malted Milk.

John Layton and Co., Ltd.—Sponge goods and slab cakes made from their Frozen Eggs. Also meringue goods made with their Frozen Separated Whites.

Robert Roxburgh, Ltd.—Airox Cream Powder; Dried Eggs. New methods of cake and confectionery making by means of the "Jo-Lo" products.

Trufood, Ltd.—This firm is displaying its well-known brands of milk products and other preparations.

Various

The British Arkady Co., Ltd.—At the stand experts are available on every matter connected with the baking of "better bread." This firm specialises in a Yeast Food which is claimed to save the baker two sacks of flour out of every hundred he uses. A collection of different types of bread from various countries are shown.

Montgomerie and Co., Ltd.—"Bermaline" Flour, Extract of Malt, and Bread. "Berina" Food and Malted Milk Food.

William Simpson, Ltd.—"Lemocreme" and "Lemocheese" for baking and spreading. Also "Fruito-cremes" for piping and decorating cakes, etc.

Woolliscroft and Partners, Ltd.—Demonstrations in cake decoration.

The British Dia Malt Co.—Malt Bread Improvers, Dia Malt, Stortex, and Dia Wheat. Also Cake Improver, Maltolacton.

The Standardized Food Products Co.—"Potavie," the yeast food. Lemon-Curd, Macaroon Paste, "Icem" and "Goltina." Marshmallow Cream Powder, Malt Flour and Extract, "Otiz" Vitamin Bread.

H. S. Whiteside and Co., Ltd.—Sun-Pat Golden Nuts.

Loders and Nucoline, Ltd.—Various brands of Cocos Butters. Also "Nucoline," a vegetable fat for biscuit and confectionery work.

A. Bellamy and Co., Ltd.—The cream "Mello-Mallo," and the couverture, "Frulait."

Chocolate and Sweets

Probably at no other Exhibition has there been such an attractive and representative display of chocolates and sweets. We notice, among others, the following firms:

N. B. Walters.
James Epps and Co., Ltd.
Charles Bond, Ltd.
British Chewing Sweets, Ltd.
Whitefields, Ltd.
Maynards, Ltd.
Harry Vincent, Ltd.
Fryer and Co. (Nelson), Ltd.
Cleeves, Ltd.
J. James and Son.
The Sovereign Confectionary Co.
J. S. Fry and Sons, Ltd.
Yeatman and Co., Ltd.